# Gleanings in Bee Culture

ESTABLISHED 1873

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JULY, 1936


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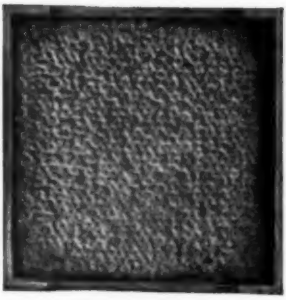

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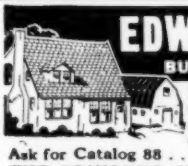

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# The Monthly Honey Market

## U. S. GOVERNMENT REPORT
### Information from Producing Areas (first half of June).

**California Points:** Southern California—Temperatures have been about normal, and with the exception of local showers in a few areas there has been practically no precipitation. Conditions have been generally unfavorable for the gathering of nectar, and in most yards no surplus is being stored. Buckwheat is in bloom, and many beekeepers are moving to buckwheat areas in hopes that the bees will be able to gather some surplus. Prospects for the bees storing any surplus for winter maintenance are extremely dubious. Demand and trading were considerably better during the past two weeks at generally unchanged prices. Eastern and foreign inquiry was fairly good during this period. Sales by beekeepers in ton lots or more per lb., f. o. b., southern California delivery points: New crop orange, water white, mostly, 5¾c; few, 6c; extra white, 5½-5⅝c; white, 5-5¼c; eucalyptus, extra light amber, 4-4¼c per lb.; mixed flowers, light amber to extra light amber, 4-4½c; amber mostly 3¾c per lb. Beeswax, demand good. Offerings were rather light and market firm at 20-21c per lb. delivered Los Angeles. Imperial Valley—Bee activity has been at a standstill, due to cool weather and hard winds. Alfalfa has not bloomed normally. Many beekeepers report heavy losses from arsenic poisoning on cantaloupe vines during the latter part of May. This condition is not abnormal, but it came several days earlier this year. Central California—Temperatures were generally below normal during the early part of June, with rising temperatures during the latter part of the period, especially in the interior valleys. Along the coast skies were overcast following a few warm days. Some of the stronger colonies are storing a little surplus honey, but colonies in many yards are barely holding their own. In some sections star thistle is yielding a little surplus, and it is expected that alfalfa, which is now starting to bloom, will also yield some surplus. The honey market has been unusually dull, with very little trading reported. Local wholesale dealers are finding outlets limited to nearby markets, with practically no demand from eastern markets or from the export trade. Dealers generally have ample supplies for current needs. Sales by beekeepers reported in ton lots or more f. o. b. central California delivery points: Extra white to water white orange, mostly 5½c; white orange, 5c; light amber to extra light amber buckwheat, 4¼-4½c; light amber eucalyptus, 3½-3¾c per lb. Northern California—Showers were general in northern California during early June, and honey plants are reported to be in fairly good condition. Buckeye, coffee berry, wild rose, holly and cascara are blooming in the hills, and bees located in these sections are reported to be doing much better than those located in the valleys, where they are getting some nectar from ladino clover and buckwheat. Quite a number of colonies have been transferred to the higher elevations. The honey market has been very quiet with very few sales reported. Prices generally remain unchanged from those of late May. Sales by beekeepers in ton lots or more, per lb., f. o. b. northern California delivery points: Light amber eucalyptus, 3½-3¾c; light amber mixed wild flowers, 3¾-4¼c per lb. Receipts of beeswax were limited to a few small lots and prices show little change from last report. Good yellow wax brought 19-20c per lb. at central and northern California delivery points.

**Pacific Northwest: West of Cascades**—The weather has been irregular in the Willamette Valley, with some rain followed by sunshine. The condition of honey plants is very good, but bee activity has been curtailed to a great extent due to the cool and rainy weather. Fireweed is just coming into bloom and the prospects are fairly good for a heavier flow than last year. Old crop honey is fairly well cleaned up in this section. In the western Washington fireweed area bees have been building up on white clover, salal, and early fireweed. Generally the colonies are in excellent shape to take full advantage of the main fireweed flow which should be especially good this season because of the large amount of rainfall. Considerable swarming has been reported from some yards. Few sales reported, extracted white manzanita in small pails, 8c per lb. Beeswax, 20c per lb. East of Cascades—In the Yakima Valley colonies have built up strongly, but because of cool, rainy weather when fruit trees and dandelions were in bloom they were not able to store much nectar, and many colonies are close to starvation. Where they can work first crop alfalfa, white Dutch clover and mustard, however, they are storing rapidly and some surplus is expected from these sources and white sweet clover which will bloom a little later. Arsenical spraying of potatoes and apples has caused some loss of bees.

**Central and Southwestern Texas.**—The crop of huajilla-catsclaw honey was generally good and much of it has already changed hands. Several beekeepers on main highways are offering it for sale at roadside stands to people on the way to and from the Texas Centennial. Colonies are generally reported to be in good condition and should be able to take full advantage of the flow from mesquite and cotton. With the exception of a few local areas very little precipitation has fallen. Heavy rains in the vicinity of Sequin prevented the bees from gathering much surplus honey from the horsemint bloom. Sales reported huajillo-catsclaw 60-lb. cans carlots, 5c per lb.; small pails, 7-9c; bulk comb small pails, 8-9c; glass jars, 10c per lb. Beeswax, 18c per lb.

**Plains Area:** Red River Valley of Minnesota and North Dakota—The prospects for a honey crop in the Red River Valley are very encouraging at the present time. Colonies have continued to gain strength under the stimulus of favorable weather conditions during the period. Package bees are in good condition. Except for occasional cloudy days bees have been gathering nectar and pollen from available sources. Yellow sweet clover is just starting to bloom and the plants are in very good condition. Heavy rains have fallen in the north and western portions of North Dakota, but only scattered showers were had elsewhere and the subsoil is extremely dry. No sales of old honey reported. South Dakota—Good rains have recently fallen in the eastern and southeastern areas, and prospects are bright for a good honey crop. In the western and southwestern portions of the state the drouth has not been broken and honey plants are showing the effects of it. Yellow sweet clover is blooming and dandelions are still yielding in some sections which is unusual. White sweet clover plants in the eastern portion of the state are not as plentiful as normal.

**Northeastern States: New York**—There is general complaint among the beekeepers in New York State that the cold weather and lack of rain has prevented colonies from building up to normal strength. Where it is not too dry, clovers and raspberry blooms are yielding nectar

and some surplus is being stored by stronger colonies. Five-pound daily gains are reported on scale hives. It is too early to estimate the extent of freeze damage to basswood buds, but many producers seem to think that little nectar can be expected from this source.

**Summary.**—Temperatures during the period have generally ranged below normal in the western and northern states, while they were above normal in the southern, eastern and northeastern states. Good rains have fallen in the Pacific northwest, in parts of the southern plains states, Great Lakes states, middle Atlantic, and northeastern states. A severe drouth continues in the northern plains region, and many parts of the South especially the southeast states north of Florida. It has also been dry in southern California and Arizona, and flowers are not yielding much nectar. Cool, irregular weather conditions in the northern tier of states west of New York has materially curtailed bee activity and the much needed strengthening of colonies, and as a result they could not take full advantage of the flow from dandelions, fruit blooms and white Dutch clover which bloomed several days earlier this year. Many package bees have not built up as they should. In those areas not short of rainfall both bees and honey plants are in generally good condition. It is expected that a good flow will be forthcoming from sweet clover and the second crop alfalfa in western areas where adequate moisture is available. Many beekeepers secured a fairly good crop from tulip poplar in the middle and south Atlantic states, but the yield was disappointing to others. New crop huajillo honey is being sold in Texas, and tupelo, gallberry, black gum and other new crop honey is being marketed in the southeastern states. Very few beekeepers have substantial quantities of old crop honey remaining unsold and many are forced to turn down orders. Prices of remaining lots continue irregular. Eastern and foreign inquiry was fairly good in southern California.

## Monthly Report of Honey Producers

Early in June we sent the following questions to honey producers: 1. At what price has honey been sold or contracted for, if any, in large lots (carload lots or less) in your locality during the past month for (a) extracted honey, per pound? (b) comb honey, fancy and No. 1, per case. 2. What are prices when sold to grocers in case lots of (a) extracted honey in 5-lb. pails, or other retail packages in terms of 5-lb. pails? (b) comb honey, fancy and No. 1, per case? 3. What is the retail price to consumers in your locality of (a) extracted honey in 5-lb. pails, or other retail packages in terms of 5-lb. pails? (b) comb honey, fancy and No. 1, per section? 4. How is honey now moving on the market in your locality? Give answer in one word, as slow, fair or rapid. 5. How does the number of colonies that are in condition to store surplus honey this season compare with the number of such colonies last year? Give answer in per cent. 6. What is the condition of the honey plants at this time n your locality as compared with the average? Give answer in per cent. 7. What is the per cent of winter and spring loss of colonies (if any) in your locality? Give answer in per cent. 8. What is the present condition of the colonies in your locality as compared with normal? Give answer in per cent? The answers received are tabulated as follows:

| State. Name. | Large lots. Ex. | Large lots. Comb. | To grocers. Ex. | To grocers. Comb. | To retailers. Ex. | To retailers. Comb. | Movement. | No. of colo. | Cond. of plants. | Pct. of loss. | Cond. of colo. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| SE-Ala. (H. C. Short) | | | | | .60 | | Fair | 100 | 100 | | 100 |
| B. C. (A. W. Finlay) | .10½ | | .70 | | .85 | | Fair | 100 | 90 | 20 | 95 |
| S-Calif. (L. L. Andrews) | .05¾ | | | | .62 | .15 | Slow | | 100 | 10 | 80 |
| C-Calif. (Davis Bros.) | .04½ | | | | .55 | | Slow | 100 | 100 | 2 | 100 |
| E-Conn. (A. Latham) | | | .75 | 4.25 | 1.00 | .27 | Fair | 100 | 75 | 7 | 100 |
| S-Fla. (C. C. Cook) | .07 | | .40 | | .55 | | Fair | 100 | 100 | 10 | 100 |
| C-Fla. (H. Hewitt) | .06½ | | .50 | | .65 | | Fair | 120 | 100 | 8 | 100 |
| SE-Ga. (J. J. Wilder) | .06½ | | .50 | | .65 | | Fair | 90 | 80 | 3 | 100 |
| NC-Ill. (A. L. Kildow) | | | | | .50 | | | 75 | 100 | 40 | 75 |
| NC-Ind. (T. C. Johnon) | | | .50 | 3.00 | | .15 | Fair | 80 | 100 | 25 | 75 |
| NW-Ind. (E. S. Miller) | | | .48 | 3.00 | .60 | .15 | Fair | 60 | 100 | 40 | 100 |
| W-Iowa. (E. G. Brown) | | | | | .65 | .20 | Fair | 75 | 110 | 30 | 90 |
| S-La. (E. C. Davis) | .05½ | | .35 | | .50 | | Fair | 100 | 90 | 2 | 100 |
| N-Me. (O. B. Griffin) | | | | | | .30 | Slow | 110 | 110 | 6 | 100 |
| C-Md. (S. G. Crocker) | | | .60 | 3.60 | .75 | .20 | Slow | 60 | 75 | 50 | 75 |
| S-Mich. (F. Markham) | .08 | | .55 | | .75 | | Fair | 75 | 125 | 25 | 85 |
| N-Mich. (I. D. Bartlett) | | | | | | | | 80 | 100 | 20 | 80 |
| C-Mich. (E. D. Townsend) | | | | | | | | 85 | 100 | 10 | 100 |
| E-Minn. (Francis Jager) | | | | | | | Rapid | 60 | 120 | 30 | 80 |
| W-Minn. (B. L. Morehouse) | .07 | | .50 | | .65 | | Fair | 80 | 95 | 9 | 90 |
| C-Nebr. (J. H. Wagner) | | | .60 | | .69 | | Slow | 50 | 95 | 50 | 95 |
| W-Nev. (G. G. Schweis) | | | | | .45 | .15 | Slow | 100 | | 10 | 100 |
| NW-N. Y. (G. B. Howe) | | | | | .65 | | Fair | 100 | 80 | 15 | 100 |
| C-N. Y. (F. W. Lesser) | .08¼ | | .52 | | | | Fair | 90 | 75 | 15 | 90 |
| NW-N.C. (C. S. Baumgarner) | | | .75 | | .90 | .25 | Slow | 90 | 100 | 10 | 90 |
| N-Ohio. (J. F. Moore) | | | .55 | | .75 | .18 | Slow | 70 | 100 | 30 | 100 |
| NC-Okla. (C. F. Stiles) | | | .50 | | .65 | .18 | Slow | 90 | 100 | | 95 |
| C-Okla. (C. A. Baltzley) | .06⅜ | | | 3.60 | .59 | .20 | Rapid | 80 | 100 | 35 | 100 |
| W-Ore. (H. A. Scullen) | | | .40 | | .55 | | Slow | 100 | 100 | | 80 |
| C-Penn. (H. Beaver) | | | .50 | | .65 | | Slow | 60 | 95 | 20 | 70 |
| SE-Penn. (D. C. Gilham) | | | .70 | 4.00 | 1.00 | .25 | Slow | 70 | 80 | 40 | 90 |
| SE-Penn. (H. B. Kirk) | | | .55 | 3.25 | .83 | .23 | Slow | 50 | 60 | 20 | 75 |
| W-S. C. (E. S. Prevost) | | | .55 | | | .19 | Rapid | 75 | | 100 | 90 |
| E-Tenn. (W. L. Walling) | | | | | | | | 90 | 25 | 5 | 90 |
| C-Texas. (T. A. Bowden) | | | .45 | | | .55 | Fair | 95 | 95 | 3 | 100 |
| S-Texas. (J. N. Mayes) | .05 | | .30 | | | .40 | Fair | | 100 | 5 | 100 |
| S-Texas. (H. B. Parks) | .05 | | .42 | | | .50 | Fair | | 100 | 2 | 100 |
| C-Wash. (G. W. B. Saxton) | | | .43 | | | .50 | Fair | 100 | 100 | 5 | 100 |
| N-W. Va. (W. C. Griffith) | | | | | | | | 10 | 25 | 70 | 50 |
| SE-Wis. (N. E. France) | | | | | | | Slow | 80 | 100 | 40 | 85 |

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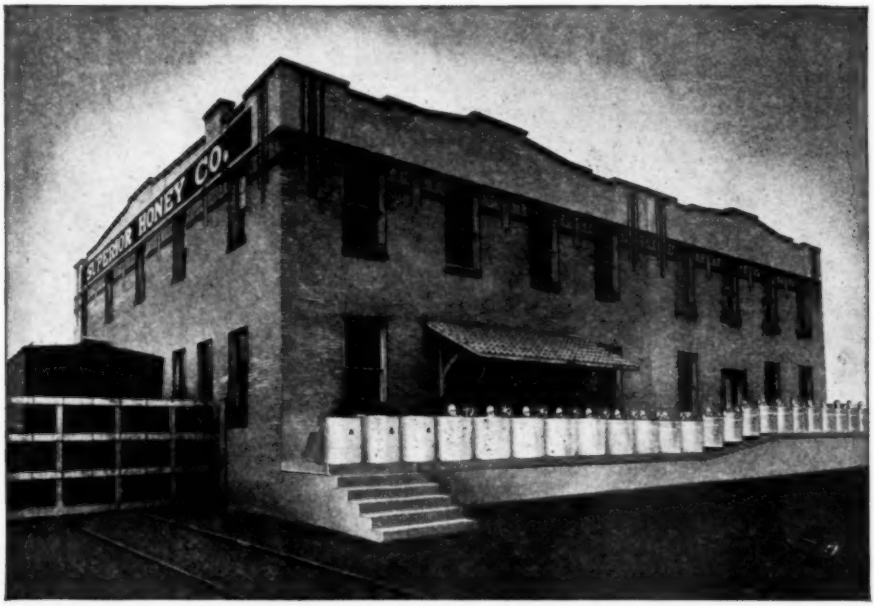
# "Be Prepared"

is a slogan well known to all Scouts and Scouters. It should also be the slogan of all beekeepers, but any beekeeper will be **better prepared to harvest the 1936 honey crop if he has a "LIFETIME" extractor.**

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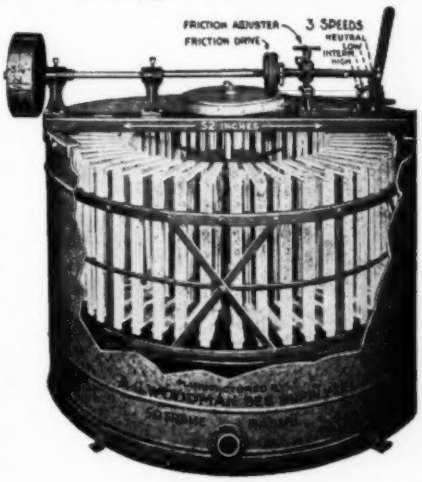


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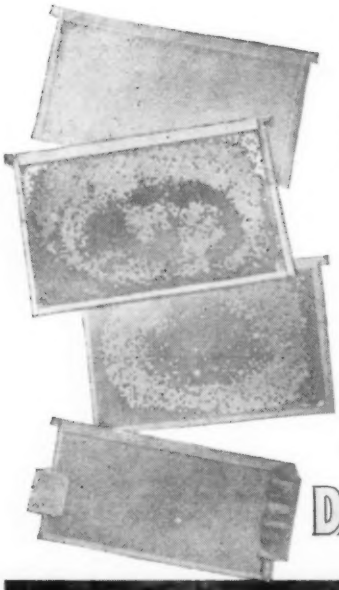

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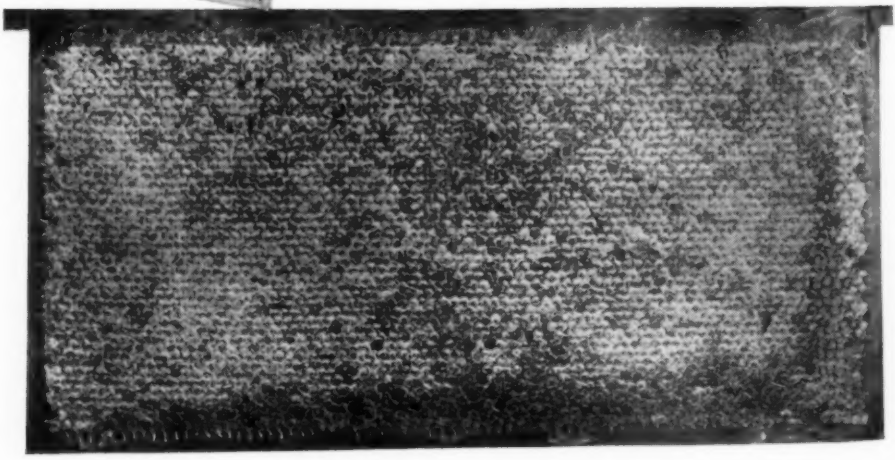

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Gleanings in Bee Culture

July
1936

# Wild White Clover in Pastures

HAROLD A. MERRELL

## Co-operation Between Dairymen and Beekeepers May Mean Much to Both Industries

Only recently have I begun to realize what co-operation between dairymen and beekeepers might mean to both if their efforts were directed toward pasture improvement.

Last summer I joined a group of farmers in a pasture tour demonstration sponsored by the New York State College of Agriculture. The demonstration was under the direction of Dr. Johnstone-Wallace and Dr. Hinman, who took us out beyond the college farm to the experimental plots. There the mechanical cow was busy clipping the thick herbage in one of the small rectangular areas. There were many of these plots and each had an interesting tale. The account which Dr. Johnstone-Wallace gave of them and the appearance of the properly managed ones, gave me a real thrill. I am convinced that any beekeeper seeing this demonstration would agree that the practices which he advocates for the dairymen would be a great boon to the beekeeping industry.

The Northeastern states have produced a large part of the wild white clover honey in the past. This production area appears to be growing smaller. Formerly it was not uncommon to find good crops of honey produced outside the limestone areas of these states. Probably when our forefathers burned off the forests the lime and phosphorus from the ash added enough fertility to the soil to enable it to do a fair job of growing our pasture clover. When the available phosphorus became depleted, the areas were abandoned in favor of better soils.

### Dairymen May Help Beekeepers

In southwestern New York, where beekeeping once flourished, there is only a skeleton of the industry left and most of the dairy farmers are now located in the valleys. Some authorities contend that disease has wiped out the bees, but it seems to me that this can account for only a part of the decrease in the number of colonies. Except under the most favorable climatic conditions, the limestone areas are not producing the luxuriant growth of clover they once did. The dairyman can improve his position if he will by making an earnest effort to increase the yield of his pasture. This will also help the beekeeper.

Phosphorus is the element which is most deficient in these impoverished pastures and fortunately phosphorus is a relatively inexpensive fertilizer. The plots at the college which had been supplied with 16 per cent super phosphate at the rate of 600 to 800 pounds to the acre, encouraged a luxuriant growth of the little wild white clover even on soil that was slightly acid. The growth of weeds—the worst enemy of our all important wild white clover, was discouraged.

The plots were cut with a lawn mower when the sward was about four inches in height. This is apparently the ideal grazing height. Those containing the best pasture plants were those which included wild white clover in the seeding. The growth was so thick that it was nearly

impossible for the sun's rays to strike through it and raise the temperature too high. The soil temperature taken under the thick sward was nearly 8° lower than that of soil exposed to the direct rays of the sun. This means a maintenance of a temperature more nearly optimum for the growth of clover and grass. Wild white clover grows best at about 65° F., a temperature which usually occurs in June and again in September.

The thick sward produced by wild white clover, Kentucky blue grass, and other associated grasses, does more than lower the soil temperature. It provides ideal protection from soil erosion. It permits the absorption of more water by the soil and there is a smaller loss by run-off from the surface.

**Soil for Clover Needs Phosphorus**

It is a common observation among beekeepers that the clover plant does not flourish every year. There is no reason why it should not be luxurious each year if it is properly fertilized and well grazed. Frequently the beekeeper reports the heaving of the clover plants in severe winters. This can be largely overcome by supplying phosphorus so the plant is strong and develops a large hardy root system. If heaving occurs the land can be rolled early in the spring to get the roots in contact with the soil. There is no question in my mind but that better pasture management will promote not only larger yields of honey but that it will mean a more consistent yield year after year.

The clover plant is a real fertilizer plant. It supplies many dollars' worth of nitrogen per acre each year if it is given a chance. The proper use of clover and other legumes in rotation makes it possible to dispense with expensive nitrogenous fertilizers.

After the demonstration at the experimental plots we were taken to a farm under Dr. Hinman's supervision. This farm was used to pasture beef cattle and the pasture was unusually well cared for. Before its treatment the soil was badly impoverished and the plant flora was largely poverty grass, devil's paintbrush, goldenrod, and wild carrot as was shown by an untreated plot. The ground had been given 600 pounds of 16 per cent superphosphate to the acre in May, 1933. In 1935 it carried the equivalent of about one Aberdeen Angus cow to the acre. The farm was divided into three sections. The first section was grazed closely. Then the herd moved to section No. 2. This procedure was continued until fall. Each section was closely clipped after grazing in June to remove weeds and ungrazed grass which shade and thus crowd out the wild white clover. In the section which was about to be pastured, there were enough wild white clover blossoms to be quite noticeable even in late summer. There was no clover

(Continued on page 442.)

Dr. Johnstone-Wallace's daughter views the June crop of clover in the Hinman improved pasture.

# W. E. Anderson

## State Bee Inspector of Louisiana

E. R. ROOT

Perhaps the last man among the state officers of Louisiana to sound his own praises is Mr. W. E. Anderson, State Entomologist and State Bee Inspector. There are few, if any, men who are in as close touch with the agricultural, horticultural, and apicultural interests of his state as Mr. Anderson. His field is, in fact, very large and he covers it well. But the point that interests beekeepers is that in respect to bee diseases, among the bee shipping states, Louisiana is as clean as any state in the Southland.

W. E. Anderson.

From what I could hear Mr. Anderson is about the busiest man in Louisiana. He thoroughly covers not only the field of general bee culture, but he takes in horticulture, nursery work including citrus canker, and the control of obnoxious insects, such as the Argentine ant, termites, and particularly mosquitoes, which in the old days long since gone by, were the direct cause of yellow fever. The tabulation of his apiary inspection work tells its own story, as follows:

1932

397 apiaries inspected.
11,125 colonies of bees inspected.
7 apiaries infected with American foulbrood.
12 colonies bees destroyed on account American foulbrood.
10 apiaries infected with European foulbrood.
98 colonies bees infected with European foulbrood.

1933

238 apiaries inspected.
7,532 colonies of bees inspected.
5 apiaries infected with American foulbrood.
22 colonies bees destroyed on account American foulbrood.
5 apiaries infected with European foulbrood.
49 colonies bees infected with European foulbrood.

The European foulbrood infection referred to in the above tabulation was controlled by the beekeepers by requeening the infected colonies.

So busy was Mr. Anderson that I made three trips to the State House before I was able to secure an interview and the picture of him as I caught him in his office just prior to going out into the field again. So far from being hurly-burly, rush, jump, and run on account of his numerous activities, I found he could take things leisurely, study out his problems (and he has many of them to solve) and then proceed in the systematic manner which yields results.

Besides all his other activities the Commissioner of Agiculture gave him the job of establishing a museum in the State House. He had no state funds for the purpose. He virtually had to make bricks without straw. He has a quiet, persuasive way that enables him to get what he asks for. The materials for the museum were donated by various individuals and companies.

In the apicultural world Mr. Anderson has been placed upon various committees and in one of the committees appointed by the American Honey Producers' League of which he was a member, funds were provided for the extension of national bee work.

His office, one of the best equipped, is located in the tower of the State House, which is perhaps the finest of its kind in the whole of the United States.

### White Clover in Louisiana

Louisiana probably leads all other states in the production of white clover

or white Dutch clover seeds. As one drives northward he finds an increasing amount of white clover until he arrives at Baton Rouge. There some seasons the legume may be a foot and a half high. The soil conditions and the climate seem to be exactly adapted for the growing of the seed. In the larger view here shown there are seventy acres with over one hundred head of cattle feeding upon it. Rather interesting to note that a bull over to the left, not shown very distinctly, rather disputed our further progress into his domain. His attitude was so threatening that after taking the pictures we left and crawled

J. W. Newton and his son.

through a barbed-wire fence none too soon. The smaller view shows a close-up of J. W. Newton, formerly president of the American Honey Producers' League, and J. W. Newton, Jr., of Baton Rouge.

White clover does not yield honey as it does in the North. The honey is a little darker in color and the amount is much

The state house at Baton Rouge, La.

smaller, but it comes at a time of the year when it is very helpful in building up colonies, especially for the package bee business. Otherwise, Louisiana would be a veritable paradise of white clover for the beekeepers. Why this legume does not yield nectar as it does in the North can not be explained.

White clover is found up and down the levees of the Mississippi River for hundreds of miles.

Seventy acres of white clover with fat sleek cattle feeding on it.

# Adulteration of Honey

R. E. LOTHROP
Carbohydrate Research Division, Bureau of Chemistry and Soils,
U. S. Department of Agriculture.

## This Is Readily Detected by Present Highly Perfected Methods

Adulteration of honey is now a rare occurrence, due largely to development of highly perfected chemical methods of detecting the common adulterants used for this purpose. Before passage of the Federal Food and Drugs Act in 1906, adulteration of extracted honey was quite common. Cane sugar syrup and glucose were then commonly used for this purpose. The addition of these substances to honey in any appreciable quantity is easily detected, so that it later became the practice to use invert sugar for adulterating honey. Commercial invert sugar syrup of approximately the same density as honey is very easily prepared from cane sugar by acid treatment and, since it is quite similar in composition to the sugar constituents of honey, its presence is more difficult to detect than is that of added glucose or cane sugar. Therefore, present methods of detecting adulteration of honey are devised primarily to ascertain the addition of commercial invert sugar.

The test most frequently used to detect commercial invert sugar in honey is the so-called resorcinol, or Fiehe, test. This test is based on the formation of a red color when an ether extract of the honey is treated with a solution of resorcinol in hydrochloric acid. Pure honey does not produce a red color when tested in this manner, whereas honey containing commercial invert sugar (prepared by treating a solution of cane sugar with an acid) produces an immediate red coloration.

A somewhat similar test (called the aniline test), in which aniline chloride or aniline acetate is used in place of resorcinol, is also commonly used to detect commercial invert sugar in honey. This test is somewhat simpler to perform and gives approximately the same results as the resorcinol test. In either test the formation of a red color indicates the presence of added commercial invert sugar.

Although, on the whole, these color tests are quite satisfactory, they are nevertheless open to certain objections which tend to limit their value, especially in court cases. For example, when pure honey is heated strongly or stored for long periods of time, it may show a red coloration when subjected to either of the above tests. It is also possible to prepare commercial invert sugar (by treating a solution of cane sugar with the enzyme invertase instead of acid) that will not give a red color when subjected to the color tests. In either of these cases it would be necessary to resort to other means of detecting adulteration.

Although honey and commercial invert sugar show some similarity in composition, there are nevertheless certain very characteristic differences. These differences in composition, particularly with respect to certain non-sugar constituents, serve as a basis for additional methods of detecting adulteration.

It is a well established fact that honey almost invariably contains more levulose than dextrose. In his comprehensive investigation of the composition of American honeys, Browne found an average value of 40.5 per cent for levulose, and 34.5 per cent for dextrose. In case of commercial invert sugar, on the other hand, the proportion of dextrose slightly exceeds that of levulose.

It was suggested by the German chemists, Auerbach and Bodlander, that this difference in the composition of honey and commercial invert sugar be used as a means of detecting adulteration. Chemical analysis with respect to the proportions of dextrose and levulose obviously would be a means of distinguishing between the two products. While this test would be quite conclusive in case of very gross adulteration, it would not be so valuable for detecting moderate adulteration with commercial invert sugar, since in the latter case the proportions of dextrose and levulose in the honey might not be changed sufficiently to indicate adulteration. For example, tupelo honey, which usually contains almost twice as much levulose as dextrose, could be mixed with a considerable quantity of invert sugar without lowering the ratio of levulose to dex-

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trose beyond that characteristic of ordinary genuine honey.

On the other hand, in case of certain floral types of honey such as alfalfa, in which the levulose content is usually only slightly in excess of that of dextrose, addition of appreciable quantities of commercial invert sugar would tend to reverse the ratio in which these two sugars normally occur in honey. The value of this test, except in cases of very gross adulteration, is obviously quite limited. It is sometimes useful as supporting evidence for other tests.

There are several minor constituents of honey, such as the mineral (ash) and nitrogen contents, that can be used for detecting added commercial invert sugar. American honeys contain on an average about 0.20 per cent ash, and about 0.05 per cent nitrogen. Although there is considerable variation in individual samples of honey with respect to the content of ash and nitrogen, nevertheless there is always present in honey a considerably greater quantity of these constituents than is found in commercial invert sugar. In addition, there appears to be an approximate relationship between the color of honey and its content of these two constituents, so that we know approximately the quantity of ash and nitrogen to expect in a honey of a given color grade.

Table I shows the percentages of ash and nitrogen in a number of American honeys in comparison with color variations. It will be seen that, in a general way, both the ash and nitrogen contents tend to increase with increase in color of the honey. Since commercial invert sugar is usually made from highly purified cane sugar, it is virtually lacking in minerals (ash) and nitrogen. It is apparent then that the ash and nitrogen contents of honey will be lowered by adulteration with commercial invert sugar. On this basis the ash and nitrogen values become quite useful in examining honey for adulteration, especially in case of gross adulteration with commercial invert sugar.

Another very effective method of detecting adulteration is by identifying and isolating from the honey the acid used in preparation of the commercial invert sugar. Since, in practice, the most convenient method of preparing small batches of commercial invert sugar is by action of tartaric or citric acid on cane sugar, these acids, as well as hydrochloric and phosphoric acids (which are commonly used in commercial practice), should be looked for in honey suspected of being adulterated with invert sugar.

The writer recently testified as a wit-

TABLE I—RELATION OF COLOR TO THE NITROGEN AND ASH CONTENTS OF AMERICAN HONEYS.

| Sample No. | Predominant Floral Type. | U. S. Stndard Color Grade (Pfund Scale) Reading. | Classification. | Nitrogen content per cent. | Average. | Ash content per cent. | Average. |
|---|---|---|---|---|---|---|---|
| 1251 | Fireweed | 0.0 | W. white | ..... | | 0.05 | |
| 1229 | Sweet clover | 0.2 | W. white | 0.017 | | 0.07 | |
| 1207 | Orange | 0.8 | W. white | 0.026 | | 0.08 | |
| 1285 | Fireweed | 1.0 | Ex. white | 0.019 | | 0.06 | |
| 1234 | White sage | 1.3 | Ex. white | 0.036 | | 0.10 | |
| 1201 | Catsclaw | 1.5 | Ex. white | 0.031 | | 0.11 | |
| 1203 | Gallberry | 1.5 | Ex. white | 0.032 | | 0.15 | |
| 1210 | Manzanita | 1.6 | Ex. white | 0.028 | | 0.31 | |
| 1252 | Mesquite | 1.6 | Ex. white | 0.034 | | 0.11 | |
| 1279 | White clover | 1.7 | White | 0.046 | | 0.10 | 0.114 |
| 1206 | Catsclaw | 1.9 | White | 0.048 | 0.0317 | 0.10 | |
| 1248 | Sourwood | 2.3 | White | 0.036 | | 0.27 | |
| 1244 | Mangrove | 2.4 | White | 0.028 | | 0.19 | |
| 1216 | Tupelo | 3.3 | White | 0.031 | | 0.09 | |
| 1377 | Cotton | 3.5 | Ext. Light Amber | 0.035 | | 0.43 | |
| 1255 | Wild flowers | 3.7 | Ext. Light Amber | 0.046 | | 0.14 | |
| 1189 | Sumac | 3.9 | Ext. Light Amber | 0.047 | | 0.33 | |
| 1195 | Dandelion | 4.4 | Ext. Light Amber | 0.039 | | 0.39 | |
| 1209 | Holly | 4.4 | Ext. Light Amber | 0.047 | | 0.51 | |
| 1213 | Eucalyptus | 4.5 | Ext. Light Amber | 0.039 | | 0.24 | 0.269 |
| 1214 | Fruit bloom | 4.7 | Ext. Light Amber | 0.062 | 0.0415 | 0.32 | |
| 1256 | Horse chestnut | 5.1 | Lt. Amber | 0.117 | | 0.26 | |
| 1208 | Tarweed | 5.6 | Lt. Amber | 0.052 | | 0.60 | |
| 1237 | Rosinweed | 5.8 | Lt. Amber | 0.043 | | 0.07 | |
| 1287 | Bitterweed | 5.8 | Lt. Amber | 0.037 | | 0.16 | |
| 1239 | Alfalfa | 6.0 | Lt. Amber | 0.046 | | 0.13 | |
| 1202 | Chinquapin | 6.8 | Lt. Amber | 0.063 | | 0.79 | |
| 1257 | Wild flowers | 8.3 | Lt. Amber | 0.053 | | 0.40 | |
| 1337 | Palmetto | 8.3 | Lt. Amber | 0.049 | | 0.23 | |
| 1215 | Unknown source | 11.5 | Dark | 0.052 | | 0.51 | |
| 1184 | Buckwheat | 12.9 | Dark | 0.186 | 0.0698 | 0.13 | 0.325 |
| | | | Average | 0.048 | | 0.23 | |

ness for the Food and Drug Administration of the United States Department of Agriculture in a court case involving honey adulteration. By using a large number of different tests to prove adulteration, the government was able to present a very effective case. The honey was found to contain a definite quantity of tartaric acid, which was isolated from the honey and identified. Since tartaric acid is not found in pure honey, its presence in this case could only be explained on the basis that it had been used in the manufacture of the adulterant, namely, commercial invert sugar.

In addition, the quantity of ash and nitrogen present in the honey, the proportions of dextrose and levulose, and the resorcinol and aniline color tests all indicated the presence of very considerable amounts of commercial invert sugar. The sample was also found to be lacking in certain plant pigments (coloring matter) that honey of its particular color (light) usually contains. This latter test may be of considerable value as a method of detecting adulteration.

A considerable proportion of the coloring matter of light-colored honeys consists of plant pigments, such as carotin, xanthophyll, and chlorophyll decomposition products, which impart to them their characteristic golden color. Sometimes, as in the case of tupelo honey, the shade of color may be distinctly green. The color of commercial invert sugar, on the other hand, is due to caramel. The two colors are quite different, which fact offers a means of detecting adulteration by use of color analyses.

In the above case the jury required only twelve minutes to bring in a verdict favorable to the government. This case is mentioned because it illustrates the advantage of using a number of different methods for detecting adulteration, rather than of relying on a single test. In order to be most conclusive, the various tests should be of such a nature that they are entirely independent of each other. The application of these methods also illustrates the value and usefulness of a more exact knowledge of the quantity and nature of the components of honey that occur in relatively small amounts. By use of such critera it is possible not only to detect the presence of an adulterant, but also to estimate approximately the amount present.

Washington, D. C.

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# A Confab

E. R. ROOT

## Between an Editor and a School Teacher

Sometimes there is more interesting information passing in private letters than that which appears on the printed page. Perhaps what I am about to relate is a case in point. The *dramatis personae* in this case are Flora E. McIntyre, of Pasadena, California, Allen Latham of Norwichtown, Connecticut, and the Editor. As time goes on doubtless more will "lip in." Anyhow, it is a free-for-all fight. Not "may the best man win," but may the truth come to the fore. If pet theories, or orthodoxy are shot to pieces in the final summation, the industry will have gained and we will all laugh and shake hands.

The Editor in the confab was temporarily located at San Antonio, Texas, away from his bee library, but where he could sport in the sunshine of the Southland. Miss McIntyre was likewise living in the sunshine, but in the Golden State and the school teacher, poor man, was shivering in the cold, cold North snow bound.

What started the discussion? Miss McIntyre, a queen breeder and a helper to her father, who had at one time an apiary of 500 colonies all in one location in the Sespe Valley, and who later helped push her way through college with funds she

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earned in her apiary work, has written a book on bees for children, and a good one it is. She sent the manuscript to the aforesaid Editor for suggestions and criticisms. These were made and sent on to Miss McIntyre and likewise a copy sent to the aforesaid school teacher, Mr. Latham, a non-respector of men, theories, or orthodoxy. He is a man whom the Editor regards as one of the best authorities of real bee behavior in the country. Not like the proverbial bull in a china closet, quite, yet he might be called the Borah in beedom, smashing orthodoxy or science. He would just as soon be on the other side of the fence as not.

We need men of that type once in a while to get us out of the ruts. The Editor is frank to admit that there is no man in all beedom whose opinions should be weighed more carefully than the erstwhile science teacher, Mr. Latham, but now a commercial queen breeder. We may or may not agree with him. Let's see.

### Orthodoxy on Trial

We will begin by giving here a copy of the letter sent by the Editor to Miss McIntyre, as follows:

December 30, 1935.

Miss Flora McIntyre,
1334 Wellington Avenue,
Pasadena, California.

Dear Miss McIntyre:

Your letter, together with the manuscript, was dully received. Although my time was somewhat limited, I went over your entire manuscript. Evidently you must have done a large amount of reading, which, coupled with your experience with your father in producing honey and raising queens, has enabled you to turn out a manuscript of which you may be proud. When one attempts to write for children he is apt to use big words but I see that where you use any technical word or big word you make an explanation. Any child of twelve or fifteen years or older would be able to follow you all the way through, especially if you put in some fine photographs.

Now, let's go over the book, page by page, and let me say in advance that if I had a little more time I could be a little more accurate perhaps in some of my criticisms. I haven't the time just now to look up authorities and so I must depend somewhat on memory. I would not rely on Cheshire. While he criticized others he made errors himself. (See Latham letter following.) Cowan in the structure of the honeybee was much more accurate.

You can depend upon the word of Snodgrass, Casteel, and Dr. Phillips. For references concerning this, consult the anatomy of the honeybee and the general subject of pollen, especially the detail of how pollen is collected. I am quite sure you have consulted these authorities.

After I have given you my suggestion I would like to send your manuscript to Allen Latham, Norwichtown, Connecticut. Allen Latham is one of the best informed in the matter of bee behavior of anyone in the United States. He is an old school teacher, now a queen breeder, and a very careful student of bee life. Where he or I may differ in bee behavior, you may consider that he is nearer correct. Now, let's take up your manscript, page by page.

Page one, on the first line, you say that the honeybee queen had forty thousand children where more than thirty thousand were daughters. Allow me to suggest that you put the numerical count at sixty thousand. The ratio of daughters to drones should be much higher than you have indicated. You said of the forty thousand children more than thirty thousand would be daughters. This ratio might be correct for an old box hive, but for a modern hive, such as you described, it would hardly be correct. I would say that nearly all of the inmates of the hives are worker bees, or daughters, as you have it. When you speak of the inside of their home you may possibly use the words streets and alleys referring to the spaces between the walls of the honey comb. (See Preface to the book, "Starting Right with Bees.")

At the bottom of page two, I would say possibly the "golden queen" put the eggs in the big cells. The last line I would say probably the workers put in some eggs. I don't think anyone ever saw a queen lay an egg in a queen cell. Mr. Mell Pritchard, our queen breeder, thinks that the evidence shows that the eggs are put in queen cells by bees, that is, they are transferred in the first place from worker cells.

Page 4, along about the middle of the page, you speak about the cluster out in front, preparatory to swarming, going inside and stirring up the bees to swarm. You may be right but I have never read anything along this line before. Unless you have definite proof that this occurs, I would leave it out. In the same way, I would leave out all other doubtful points.

Page 8, you speak of the bees polishing the cells with their tongues. You may be right here, but it is my opinion that all the polishing of the cells is done with all the mouth parts of the bees, particularly the mandibles. If the cells had been formerly occupied by brood there would be cocoon remnants that would have to be torn out by the mandibles after the comb had been used for considerable length of time in brood rearing. The tongue is so soft, like that of a camel's hair brush, that there would not be very much scrubbing power. The term "mouth parts" would cover both tongue and mandibles.

Page 15, near bottom of page, you say the workers drag out the surplus of extra virgin queens, some dead, some dying. This may and probably does occur, but in most cases I would say that the virgins disappear of themselves with small bunches of bees in after swarms. However, you are right in the case of a normal parent colony when it finds that it has been depleted of brood and bees. The probabilities are that the queens fight it out. It is a case of the "survival of the fittest." Understand I do not say you are wrong here, I just raise the question.

At the top of page 15, you speak of the stinger of a queen being longer than that of the honeybee. I know that it is curved or crooked while the sting of the honeybee is perfectly straight but I did not know that the sting of the queen was longer than that of a worker. You may be right, however.

At bottom of page 17, referring to the last sentence, may I suggest that you use this reading, "That is how it happens that there is never any father of the bees in a beehive." The sentence as you have it might imply that there were never any drones in a beehive where there are lots of bees. Your statement is not wrong, but I think it would clarify it a little to change it as I have suggested.

Page 21, you may be correct on the question of how the pollen is deposited in the pollen sacks. You will not go far wrong if you follow Casteel on this. See "Pollen" in the two late editions of the A B C and X Y Z of Bee Culture, 1929 and 1935. Also see bulletin No. 121 of the Bureau of Entomology.

Page 23, I raise the question whether the en-

zymes ever come from the heads of the bees. It is my opinion, and probably only a guess that they originate in the digestive tract of both bees and animals. In a book for children I think I would avoid the term enzymes and use instead digestive fluids without attempting to state their origin.

Page 24, in first paragraph, the hive, that is referred to in the A B C and X Y Z of Bee Culture under head of Ventilation, did not have any combs melt down. Perhaps you refer to another incident.

Further along on the same page you speak of the temperature of the brood nest as 93° Fahrenheit. I have it in our A B C as 95°. I don't remember now how or where I got the figures. You may be right and I may be wrong. For an exact statement I would refer you to W. J. Nolan of the Bureau of Entomology, Bee Culture Laboratory, Washington, D. C. Nolan has done more work on brood and brood rearing than perhaps any other man in the United States, if not of the world.

Page 26, in the middle of the first paragraph, your theory that the bees fill up with honey because they fear that the hive is on fire may be correct, but I have never seen this advanced before. It has been my guess, and only a guess, that the bees put their heads in the worker cells and fill up with honey to get away from the smoke.

It has always been my policy when there is a difference of opinion among the authorities to refer to that difference or leave out the doubtful point entirely. You are seldom sorry for what you have not said.

You may find some helpful hints under the head of Bee Behavior in the last edition of A B C and X Y Z of Bee Culture. Your manuscript as a whole is well written. In some of the corrections that I have indicated you may be nearer right than I. You have had a large experience with your father but you have gathered more of general bee behavior from your queen rearing work than you did in the production of comb honey. E. R. ROOT.

A copy of the foregoing letter and likewise Miss McIntyre's manuscript was sent to Mr. Allen Latham, Norwichtown, Conn. After receiving them both he wrote:

January 28, 1936.

Mr. E. R. Root,
Angeles Court, 2424 Fredericksburg Road,
San Antonio, Texas.

Dear Mr. Root:

I am not in the habit of making carbon copies of my letters, and so can not send you a copy of the letter I wrote to Miss McIntyre. I can recall that I congratulated her upon writing the best book on bees for children that I had ever read.

I also recall that I told her not to use "probably" where you asked her to, telling her that it was very improbable. I told her that I did not believe that bees polished cells with their tongues, but might possibly furnish with the tongue a polishing fluid.

I told her that 5-6 would be a better fraction from the swarm than her ½. I have seen as high as 9-10 of the bees go with the swarm, or even better than that. I seldom have seen as small a number as one-half go. I suggested that she make it clear that she was writing for the California climate, for many of her dates would not fit New England and other parts of the country.

I assured her that the term lazy should not be applied to drones as they are far from lazy. But I congratulated her for not having the workers sting the drones to death at the close of the season.

I told her to avoid using the term "worker eggs" but to use female eggs. I informed her that worker grubs were not turned to queens, but queen grubs turned into workers. That the queen is normal, the worker abnormal. Most writers have been blind to this fact, but I am sure you will agree with me. Until a female grub is close to three days of age it is a queen in all but intent on the part of the bees. They have then to do something to prevent it from becoming a queen.

We do carelessly speak in the opposite way when speaking about rearing queens. I have done it myself, though I knew better.

I wrote only a brief letter to Miss McIntyre, making most of suggestions on the margins of the carbon copy she submitted to me.

I recall that I informed her that the mating act was not instantaneous as she implied, and that the drone did not die slowly, but did die the instant the act was accomplished.

I told her that bees did not pack their baskets with the combs on the hind legs, but packed with the middle legs as anyone can see by watching the bees gather pollen or meal. The front legs are constantly going to the tongue and then to the middle legs which in turn constantly go to the hind legs. The tongue moistens the front legs, the middle legs carry the pollen in small lumps held together by the moisture to the pollen baskets.

I told her that the combs did not take the wax scales from the wax-making pockets, but that the combs would be more likely to cause the scales to be lost. I told her that the scales were pulled out by a drawing motion, not a pushing motion, and that the scales were, when loosened, passed by the middle legs forward to the mouth by way of the front legs. Now, I may not be entirely right in this, but as I have watched the bees that is how it looks to me.

I told her that the bees in the outer layer in winter did not pass honey in to the middle of the cluster, that they were perfectly quiet and packed so close together that they could not do this, also that the honey where they were was so hard that they could not do it anyway. I told her that there were open cells of honey right in the midst of the cluster, which open cells were replenished from above the cluster, and on mild days from outside the cluster.

I told her that the queen never leads the swarm, and that she was not the most excited of all. She was often loath to leave the hive, that sometimes she did not leave the hive, and the bees came back since she had not left the hive.

I told her that the queen did not determine directly the place where the swarm would cluster. That a few control bees determined it, but that the cluster might be determined by the failure of the queen to reach the selected spot, either by faulty wings or heavy body.

I told her that there was no guesswork as to how the bees were drawn to the swarming site, that scent was absolutely the known lure.

I told her that the majority of the bees that went with the swarm were nurse bees, or rather that the majority of the nurse bees went with the swarm. I think that this is a fact not generally accepted. My own observations tell me that the bees left in the hive are the very old bees and the very young bees.

I told her to be very confident that the queen lays in cell cups. That though I had not seen a queen do this, I had seen her poke her head into a cup and soon thereafter the bees were feeding a grub in that cup. I have no idea at all that bees place eggs in cups. Bees may move eggs, but they either eat them or fly out of the hive with them. I have always thought that this idea of egg-stealing and implantation was too absurd to contemplate.

I thank you for the kind words you said of me to Miss McIntyre.

I wish I could be with you where you now are. We have had terrible cold now for ten days.

Sincerely yours,
ALLEN LATHAM.

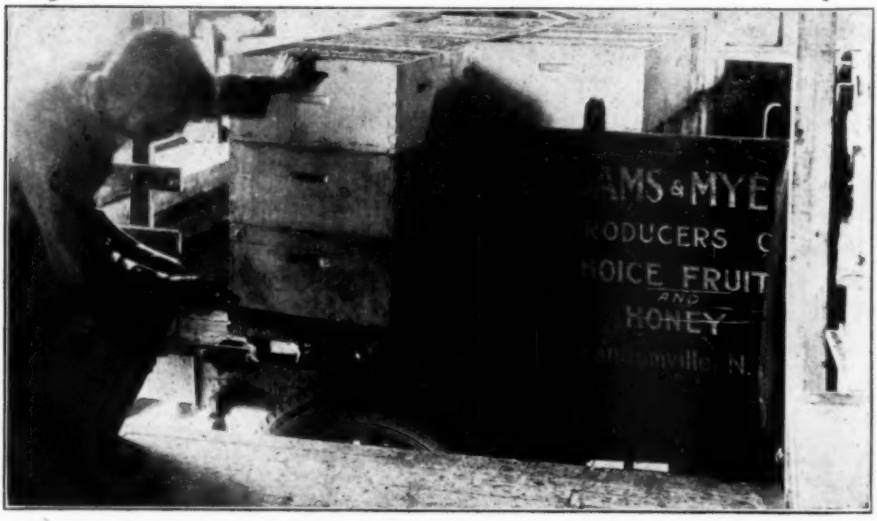
(Continued in August issue.)

XUM

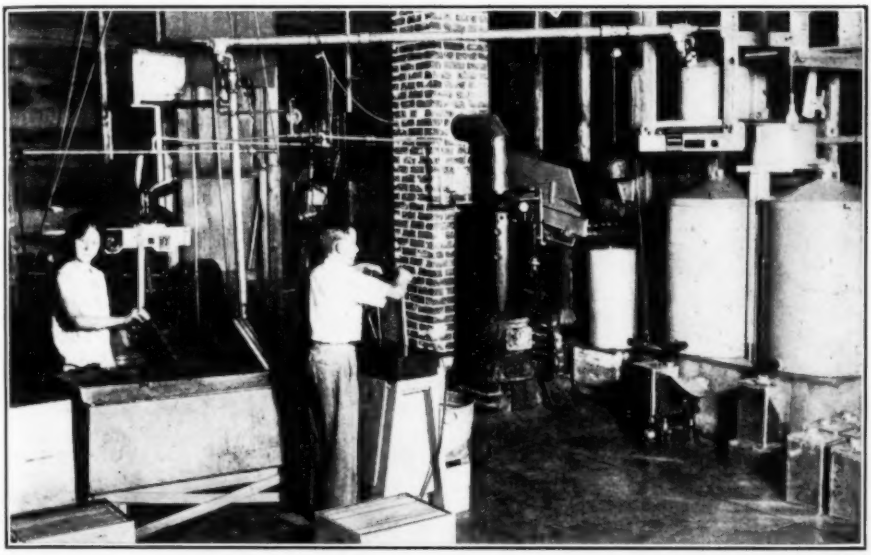
# Honey Extracting Plants

**For the convenience of our readers who are planning to build this year, we are reproducing a number of illustrations of honey-houses, extracting rooms, floor plans and diagrams that have appeared in Gleanings in the last ten years. A number of useful labor-saving plans will be found. The legends tell the story.**

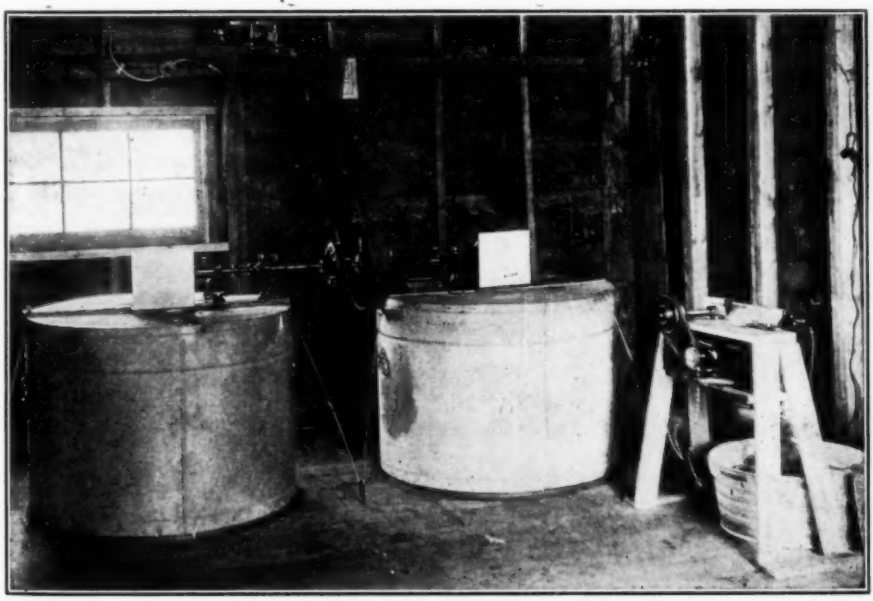
Adams & Myers' honey house at Ransomville, New York. An inclined driveway leads to the extracting room located above the honey tanks so that honey runs from the extractor to the tanks by gravity. The room in which the boiler is located has concrete block walls.



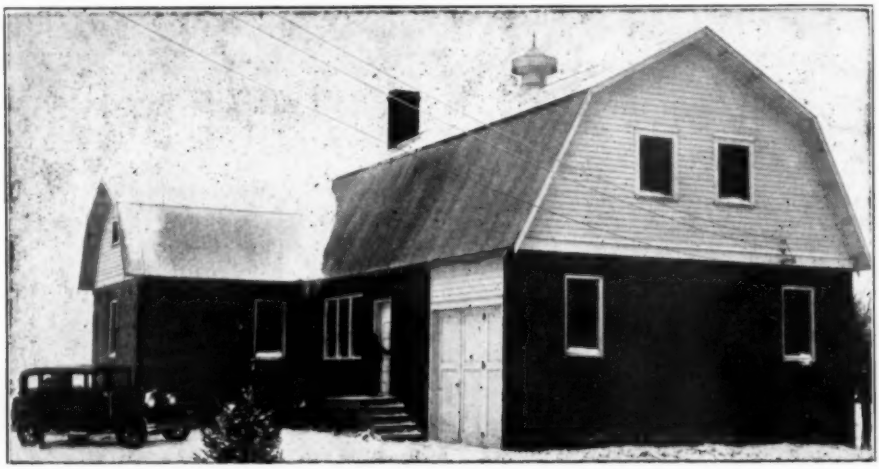

The advantage of having the extracting room floor level with the floor of the truck. Filled supers loaded on "dollys" are easily pulled from the truck to the extracting room floor, six supers at a time.



General arrangement of extracting apparatus used by G. A. Pauli, of Pueblo, Colorado. The boy is operating the uncapper, while the young lady is loading the extractor, which is at her back. The pipe from the honey pump to the settling tank, the horizontal portion of which contains a steam pipe, is shown overhead.

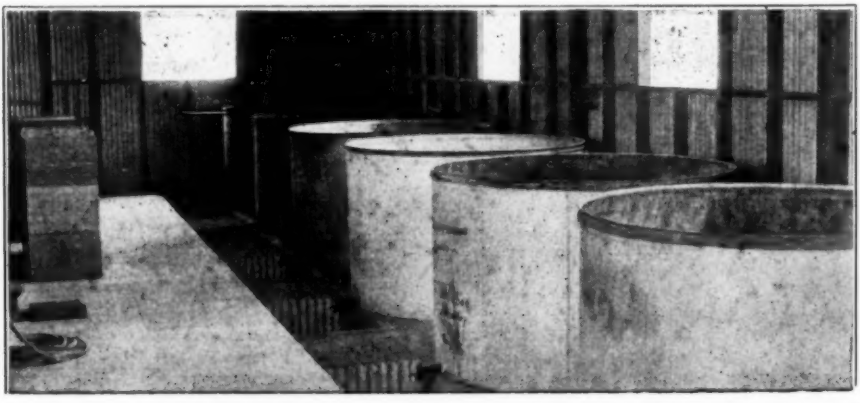


Chazy Orchards' extracting equipment, Chazy, New York. The honey runs by gravity to large tanks in the room below. Below floors are accessible to motor trucks.

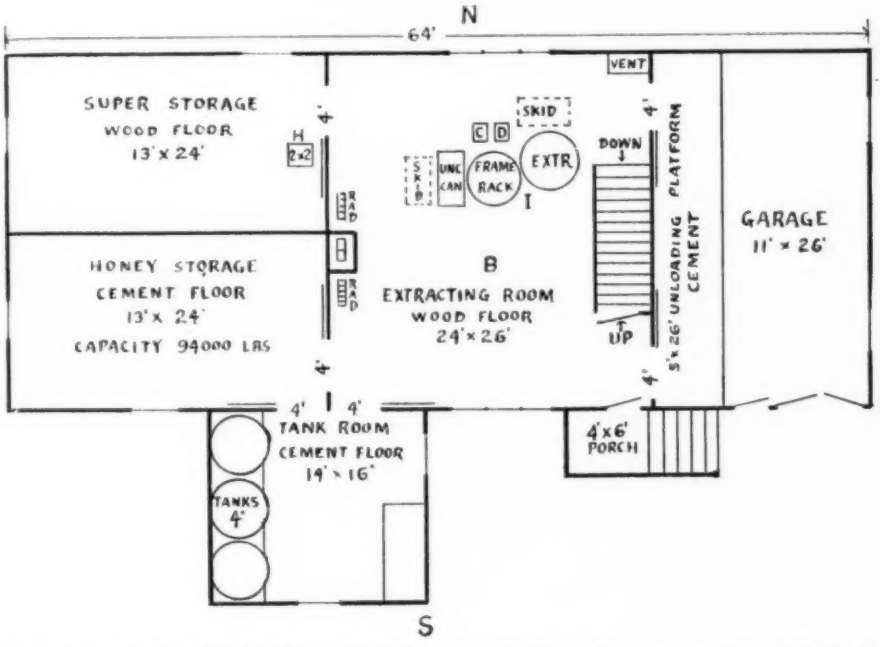


O. H. Schmidt's honey house in Bay City, Mich. The large doors lead into the garage, the floor of which is three feet below the main floor to facilitate unloading. The door from the porch leads into the extracting room. See floor plans, page 405.

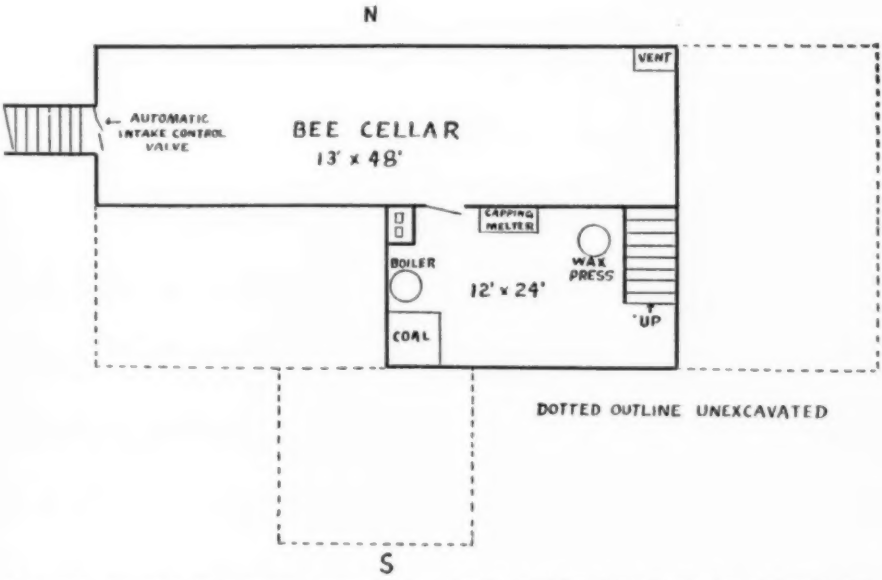
General view of Mr. Hiltner's honey house, Continental, Ohio. The load of filled supers is driven into the building through the large door when the floor of the truck is on the level of the loading platform. The extracting room is at the right.



Tank room in R. W. Tabor's honey-house, Brawley, California. Concrete pits below the honey gates afford room for filling cans.



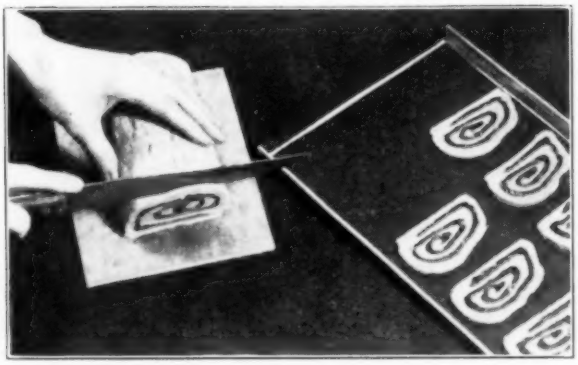

Floor plan of O. H. Schmidt's honey house, Bay City, Michigan. (Photograph of the building on page 404.)




Basement plan of O. H. Schmidt's honey house, showing location of the bee cellar and wax room.

# Ice-box Cookery

MRS. BENJAMIN NIELSEN



**During Hot Days**

**Easy Cooking**

**and Cooling Drinks**

**Are Desirable**

Filled ice-box cookies.

No more is the honey jar pushed to the back of the shelf to await the coming of crisp autumn days which seem to demand biscuits and honey. The delightful flavor which honey imparts to food combinations may be used to excellent advantage in adding variety to summer-time menus. And somehow days just don't seem so hot when one knows there is a goodly supply of tempting honey-way foods (prepared in the cool of the early mornings) tucked away in the refrigerator to be served on short notice.

### Filled Ice-box Cookies

Thin, crisp, crunchy ice-box cookies are just the thing to rely upon during those blistering hot days when the ordinary cakes and pies are much too heavy. Filled ice-box cookies are appealing to the eye, which will please the women, and are a bit more substantial than the ordinary kinds, which will appeal to the men folks. So assemble: One cup butter, ½ cup brown sugar, ½ cup white sugar, ½ cup honey, 2 eggs, 1 teaspoon soda, ½ teaspoon salt, 1 teaspoon vanilla, and sufficient flour to make a dough sufficiently stiff to roll up. The amount necessary will vary, depending upon the honey and type of flour used. Usually five to six cups are necessary. Chilling the dough before rolling is attempted makes handling much easier, requiring less flour and resulting in much better cookies.

Cream the butter and sugar until fluffy. Add honey and well beaten eggs. Mix thoroughly, add vanilla, and stir in the flour which has been sifted with the soda and salt. Roll the dough out to about one-fourth inch in thickness. It is easier to handle if one rolls about half of the dough at a time as the dough is very stiff.

For the filling, pit one pound of dates and put them through the food chopper, add one-third cup water, one-third cup honey and one cup chopped walnut meats. Cook ten minutes. Spread on rolled dough. Then roll up as for jelly roll. Wrap in waxed paper and place in refrigerator

(Continued on page 438.)

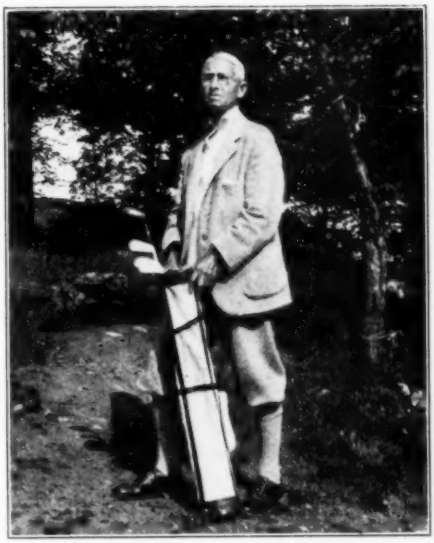
Honey ice-box cake.

# Let's Look Into Costs

S. L. FORREST

## Some Pertinent Facts in Regard to a Sadly Neglected Phase of the Honey Industry

[With 40 years of experience in Canadian banking institutions, Mr. Forrest brings a purely mathematical mind to bear on this important phase of beekeeping. From 1926 to the present time he has interested himself in a careful analysis of costs in connection with comb and extracted honey production as carried on in his son-in-law's apiaries.—Editor.]



S. L. Forrest.

In view of the importance of a knowledge of production costs in business generally, in this day and age, it is surprising to note the lack of such data in so far as honey production is concerned. A perusal of the apicultural journals reveals a veritable dearth of material of this kind. Even as the question of marketing has come more and more to the fore of recent years as a subject deserving of special consideration so also should a proper understanding be arrived at as to what honey costs to produce, if this be at all possible.

In the last decade we have seen honey production grow by leaps and bounds—indeed to such an extent, in Canada at least, that consumption is lagging far behind production with an accompanying fall in prices. Exports have been unable to take care of the surplus from domestic markets. If many beekeepers are to continue in business on the small margin of profits now prevailing a strict accounting of what goes into production of a crop would appear to be of utmost importance. Beekeepers should at least know to what point prices may be depressed before the dead line is reached. There are undoubtedly at the present time many instances of beekeepers selling at prices well below production costs for the reason that they simply do not know what their honey has cost them in the first place.

The data accumulated during the past ten years in regard to production costs would appear to be worth while presenting in condensed form. It may possibly bring home to others the fact that, year in and year out, the producing and preparing of a crop of honey for market runs into very considerable sums.

Table I, next page, is a tabulation of all expenditures in connection with the production of each year's crop over a period of eight years. These expenditures or costs have been grouped under six headings. That entitled Labor represents moneys paid for the services of a manager. This charge is one which in all probability will be subject to criticism. Just what a beekeeper should charge for his time is debatable. Notwithstanding, some charge certainly should be made. In our own case labor has been charged for at what it has been found necessarry to pay a first-class man as manager upon whom dependence could be placed for the responsibility entailed in the operation of a highly specialized and perishable business. His efficiency is in no small way reflected in the sustained production shown during the years under consideration, that is, with the exception of 1934, when disease made itself present with the usual heart-breaking results.

### Labor Charges Justifiable

Had this business been operated direct-

CONDENSED BALANCE SHEET—HONEY PRODUCTION.
EXPENDITURES

TABLE 1. OPERATING COSTS—1927-1934 INCLUSIVE.

| Year. | Hives. | Labor. | Supplies. | Truck, Auto, etc. | Taxes, Rentals, Sugar fed. | Insurance. | Sundry. | Totals (expenditures) |
|---|---|---|---|---|---|---|---|---|
| 1927 | 239 | $577.95 | $623.27 | $185.63 | $290.00 | $59.00 | $38.00 | $1773.85 |
| 1928 | 183 | 661.30 | 361.00 | 199.94 | 265.00 | 59.00 | 78.00 | 1624.74 |
| 1929 | 159 | 575.00 | 313.81 | 281.33 | 180.00 | 59.00 | 15.41 | 1424.55 |
| 1930 | 215 | 575.00 | 364.15 | 153.43 | 156.75 | 59.00 | 35.30 | 1343.63 |
| 1931 | 288 | 652.50 | 427.50 | 236.97 | 225.40 | 59.00 | 16.25 | 1617.62 |
| 1932 | 389 | 1007.90 | 611.64 | 233.33 | 159.53 | 59.00 | 65.30 | 2146.70 |
| 1933 | 225 | 359.15 | 208.44 | 178.76 | 102.75 | 59.00 | 10.75 | 918.85 |
| 1934 | *69 | 207.35 | 85.18 | 99.36 | 129.00 | 59.00 | 2.40 | 582.29 |

*American foulbrood.

ly by the owner, which due to certain circumstances was not possible, this charge might be transferred to the profits column and in all probability would be by the average beekeeper. However, no matter what the system of bookkeeping, some charge for the labor involved in the production of a crop does seem justifiable. As already stated, a proper consideration of this point, when estimating profits in honey production, would be in the best interests of the industry as a whole. When an individual's time has been accounted for at a wage commensurate with the experience which he has had to acquire in order to avoid the pitfalls of the business, it is then and then only time to figure whatever remains as the profits from the business. This is the money which may be utilized in expansion or placed as a reserve against the years when nature does not provide so bountifully.

Unfortunately of late years when such charges have been properly apportioned the amount which may rightfully be considered as surplus is practically non-existant. Indeed at prices at which honey has been thrown on the market by certain individuals during the past season it is hard to understand how they hope to secure even the wages of a common laborer for their product.

Table 2, as below, shows in condensed form, receipts, expenditures, amount of crop and estimated profits from all honey sold over the eight-year period. Comb honey has been valuated on the pound basis for greater simplicity.

The average selling price of the honey over the period of years was approximately 9¾ cents per pound. This figure is based on both wholesale and retail sales prices as quite a considerable portion of each year's crop was sold at the roadside booth or in bulk to consumers. As a consequence the figure of 9¾ is, of course, better than the average of wholesale prices obtaining in the open market during the same period. The average cost of producing h ney in these apiaries over the period in question was approximately 6¾ cents per pound, inclusive of all charges excepting that for interest on investment. (This factor will be dealt with separately.) There is thus left an average net profit of about 3 cents per pound.

TABLE 2—RECEIPTS—1927-1934 INCLUSIVE.

| Year. | Honey produced.* Extracted, pounds. | Sections, number. | Av. selling price. | Gross annual sales. | Gross annual costs. | Reserves. | Net profits. |
|---|---|---|---|---|---|---|---|
| 1927 | 29,222 | 300 | $.095 | $2783.58 | $1773.85 | ..... | $1010.03 |
| 1928 | 20,527 | 1450 | .123 | 2706.18 | 1624.74 | $195.54 | 885.90 |
| 1929 | 17,316 | 1758 | .128 | 2451.16 | 1424.55 | 199.76 | 826.85 |
| 1930 | 22,989 | 2777 | .093 | 2407.68 | 1343.63 | 99.54 | 964.51 |
| 1931 | 25,111 | 3153 | .089 | 2516.11 | 1617.62 | ..... | 898.54 |
| 1932 | 39,937 | 3510 | .077 | 3352.20 | 2146.70 | 389.48 | 816.02 |
| 1933 | 16,508 | 634 | .080 | 1437.36 | 918.85 | 196.51 | 322.00 |
| 1934 | 7268 | 992 | .100 | 836.61 | 582.29 | ..... | 254.32 |

*No dark honey produced in this region.

TABLE NO. 3—CAPITAL ACCOUNT.

Details taken from actual setup. Valuations are, of course, arbitrary.

| | |
|---|---|
| Land—Site of beekeepers' home, honey house and probably main apiary. Located with view to accessibility, privacy, roads, water, etc. | $500.00 |
| Buildings—Honey house, including storage room and garage space. Two-story building, 20x40, concrete floor, well lighted, etc. | 1500.00 |
| Equipment—1200 supers of drawn comb at $1.50 per super | 1800.00 |
| 100 quadruple wintering cases at $5.00 each | 500.00 |
| Honey extractor, gas engine, tanks, presses, uncapping equipment, steam boiler, queen excluders, comb honey supers, feeders, tools, etc. | 500.00 |
| Machinery—Ton truck, small car, floor truck | 1000.00 |
| Bees—400 colonies in standard ten-frame hives, at $5.00 per colony | 2000.00 |
| Total estimated value of plant | $7800.00 |

Even as the matter of labor charges are entitled to due consideration in the estimation of costs in the production of any crop so also should the matter of investment or interest on capital be taken into consideration. Unfortunately in so far as the beekeeper is concerned this point for the most part is completely overlooked. Table No. 3 is an approximation of what would in all probability be required for the operation of a moderately-sized honey business.

A central plant, such as has been outlined, should be large enough for the handling of upwards of fifty or sixty thousand pounds of honey. Expansion would be along the line of additional out-apiaries, wintering cases and added supers. It will be noted in the above table of capital invested no allowance has been made for residence for the owner. This also would have to be taken into consideration in a a complete analysis of the situation. Here then at the very least is an investment of some seven or eight thousand dollars. In the present instance this investment is the accumulation of the years. In all probability this is the safest way in which to build up any beekeeping business. As the plant enlarges so also does the knowledge of the individual in regard to the difficulties which beset large scale honey production and his ability to cope successfully with the same.

In view of the high degree of risk and uncertainty in connection with the business of honey production it seems most unfortunate that so many beekeepers, after having gone through much anxiety and heavy expense in connection with the production of ther own crop, should be in the unfortunate position to have to sacrifice it due to the unbusinesslike methods of the few. It would most certainly seem to be about time that some constructive work be done toward educating beekeepers in general to a truer knowledge of the value of their product. In the latest copy of the bulletin issued by the Ontario Honey Producers' Co-opertaive, the continued practice of price cutting by certain individuals in the industry is viewed with grave concern. If the above analysis of costs of production are any indication of the true state of affairs it must surely be plain to all concerned that honey sold at prices below the minimum of eight cents is practically selling at cost and no business can prosper in the face of such conditions. In conclusion it is to be hoped that if there are others who have data available covering the matter of costs in connection with their business that they will take the trouble to present the same in such a manner as to make possible a clearer understanding, on the part of the many, the importance of this knowledge in connection with the proper merchandizing of their crops.

Ottawa, Canada.

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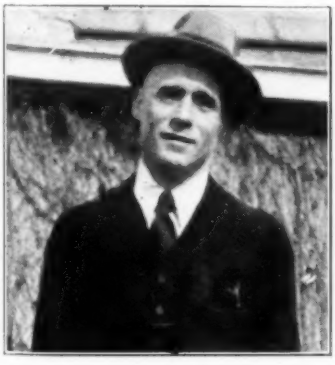


Wallace Nelson.

### A New Zealand Beekeeper

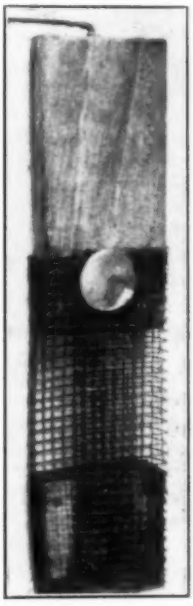
A few weeks ago we had a visit from Wallace Nelson, a commercial beekeeper from New Zealand. Mr. Nelson is a native of Scotland. He was trained in mechanical draftsmanship and spent several years with some of the largest concerns in the United States and Canada.

Due to ill health he left his trade about fourteen years ago and went to New South Wales to study queen rearing under W. A. Goodacre, Senior Government Apiarist. Later he crossed over to New Zealand and became established in beekeeping. At present he has nearly 400 colonies and would double this number if he could be relieved of his present official position as Chairman of Directors of New Zealand Honey, Limited, which demands one-half of his time. He is also President of the National Beekeepers' Association of New Zealand. Mr. Nelson is now in excellent health and attributes his recovery to a changed occupation and the use of honey in his diet. The New Zealand Honey, Limited, is a co-operative marketing concern representing approximately 70 per cent of the New Zealand beekeepers. The per capita honey consumption in New Zealand is four and three-quarters pounds.

# From the Field of Experience

## DIRECT METHOD OF INTRODUCING

### Dumping the Queen Among the Bees on the Hive Bottom Must be Done Carefully



Over a year ago I received a letter from a beekeeper friend in Holland, in which he recommended a new method of introducing queens. As it was quite a drastic way of introducing queens, I had my doubts if this system ever could be used in America. I tried it out once, twice, and many times, and it worked. I tried it with young queens from the South, as also young laying queens from nuclei, and it made no difference.

If the young qeeen is in a shipping cage, take out the small nails in the top screen except the two by the candy and place the cage by the colony to be requeened. Open the hive and look for the old queen and kill her. Take out the four frames which were next to the old queen, or, if queen is not on frames, take out four frames having eggs in cells. Throw the bees of two frames on the bottom of the hive and throw the young queen on these bees, then throw the bees of the other two frames in the same way. Insert all four frames the same way you took them out and close the hive. Ripe queen-cells should not be present in such a hive. It is also advisable to have the wing of the young queen clipped.

When I read the way of introducing queens in Gleanings, July, 1935, page 393, I tried to work these two systems together, and I am convinced that there is no better, at least, no safer way, of introducing queens. Make the colony queenless and introduce the young queen on the seventh day. Have two boxes ready and put five frames in each box. There should be two strips of wood with sharp edges in these boxes, and by letting the frames rest on these strips, very few bees will get killed. Throw the bees of each frame in these boxes and destroy all queen cells before returning to the hive. After the hive is closed, dump the bees of one box in front of the hive, throw the young queen on these bees and then dump the bees of the other box in the same place. Opening the hive after five days, the age of the larvae and the amount of the brood and eggs prove that the young queen was laying from 6 to 8 hours after introducing. What more could a beekeeper wish?

Beekeepers who produce comb honey should try this system, because colonies so treated get a wonderful working spirit, equal to newly hived swarms, or even better, on account of all the young bees which will be hatched for the next 14 days. During a good honey flow such manipulations for introducing queens would not be easy, but colonies during such a time should be requeened only if it is necessary. It should be a rule not to requeen colonies if no honey at all is coming in, as wholesale robbing would be the consequences. Beginners should be careful if they introduce queens in this way, as all work should be done as fast as possible. Of course, the throwing of the queen should be done carefully.—Bro. Frederick, Techny, Illinois.

## REMOVING WIRES FROM COMBS

### Electricity Used to Heat Wires Does the Trick

Most of my honey is produced in half-depth frames with full sheets of foundation. As there is quite a demand from my customers for the complete frame, I sell a good many. Now the only objection that the customer has to the frames is the wire, which always causes trouble in getting out of the comb.

I solved the problem by heating the wire with electricity, about the same way that it is used to imbed wires in foundation. I have found that my son's electric

train transformer is just the thing, but a six-volt storage battery or other source of electricity will work as well. A pair of pliers that will hold the frame wire without slipping is connected to the transformer through a piece of wire about four feet long. It is a good plan to tape the handles of the pliers. Next, a large spike or nail is connected to the other side of the transformer with a piece of wire the same length as used on the pliers. It is also a good plan to tape the nail to about one-half inch from the point.

As the wire is tacked on one end of the frame and looped on the other, I pull the tacks out of the one end and cut the loop in the center on the other. Then I take hold of one end with the pliers and touch the other end with the nail. In about five seconds the wire warms up and can be pulled out with the pliers, without disturbing the comb.—Alvin Rogowski, Michigan City, Indiana.

## LOSS OF QUEENS IN PACKAGES

### Queens Reared in the South vs. Those Reared in the North

There are various causes for the loss of a queen in a package of bees, but there are only two or three main causes. One cause is the fact that the queen has not been already introduced, another cause is the use of strange attendant bees in the cage with the queen, a third cause is the poor handling of caged queens, both before and after shipment or even during shipment, but the chief cause of all is poor queens.

When I say that the chief cause of all is poor queens, I am not hurling a bomb at the queen-breeders in the South, but simply stating a fact.

I have studied bees now for 51 years and it would be no boast on my part to say that I know my bees. I know what a good queen is, I know how to rear a good queen, and I know many of the things that cause a queen to be a poor one.

There are some excellent breeders of queens in the South, and there are not a few poor breeders. I can not go into much detail here as to how queens are reared in the South, for I have not been there to see. I can simply assume a few probable facts. I know from experience that one man can not rear a huge number of excellent queens all by himself. Some breeders in the South boast of the large number of queens they rear and ship. They must have help.

Now, help that is good costs money. It stands to reason that selling queens as low as they do in the South, the breeders can not hire experienced and intelligent help; they can not superintend everything about each queen that they sell. It must follow that careless and ignorant help will cause the sending out of many inferior queens.

That last statement must be true, for I have had letters from breeders in the South telling how hard they worked and what long hours they put in, and from these same breeders I have got queens which were not worth one penny, not worth the stamp that brought them to me.

So one reason why so many southern queens fail is that too many queens are reared under a rush, with insufficient care.

That, however, is not the chief cause of queen failure. My own experience here in Connecticut tells me what must be the cause. I have tried year after year to rear queens in late April and early May. I have tried to rear queens in late September. I get fine looking queens, but the majority of them are early superseded. What is the reason for this?

A careful study of queen-mating and drone behavior will throw light on this question. Compare the flight of a drone on a hot July day with that of a drone on a cool day in May or in September. The July drone flies with a whiz, while the drone in cool weather simply drones along. It takes warmth to stir a drone to full activity. Queens in the cool days of early May here and in late September fly out many times before they finally are mated. On hot July days they are mated by the time they are six days of age.

In May and September queens are often two weeks in mating and then they are poorly mated.

The mating of a drone with a queen bee is a complicated affair. I doubt if any animal in creation has a more complicated sex organ than the drone bee. The act of mating is so complicated that it usually consumes five or six minutes. If the air is hot or above seventy degrees all is well, but if the air is sixty or below, then the act is not successful. The drone bee simply can not perform his function well at a temperature much below 70 degrees Fahrenheit, and 80 degrees is better.

XUM

The queen comes back with imperfect penetration. Her organs absorb only a little of the life fluid. She can become the mother of only a few worker bees.

Now it is a well-known fact that the great demand for package bees is in the month of April, and few are sold after the middle of May. Thousands of packages are shipped, and each must have a queen. Hence, thousands of queens must be reared in March and April.

March and April are not far different from April and May when much of the South is compared with the North. It must be true that a great many of the queens reared for the package trade come to their mating age while cool days prevail and while chilly storms are in progress. It must, therefore, follow that many of those queens are poorly mated.

Some of the best package shippers will tell you that their chief difficulty is to get enough queens from the breeders of their choice. I could name one shipper from whom I have never had a poor package when the queen sent was from the breeder of his choice.

That particular breeder is a very careful man and he is farther South than many of the other breeders. Also his location may be such that conditions are favorable for good matings. Queens from him do strong work through the second and into the third season.

I feel assured that if every package sent out had in it a carefully bred and well-mated queen there would be few queen failures in packages of bees.

The only easy remedy I can see is for shippers to use wintered-over queens or else encourage the establishment of queen-breeding apiaries much farther South so that they can get an ample supply of queens that are good.—Allen Latham, Norwichtown, Connecticut.

[Mr. Latham with his usual frank way of writing, has stated some facts and drawn some conclusions that merit a careful reading whether we agree with him or not. The problem of what causes poor queens is vital. When a good queen can earn from fifty to one hundred pounds of honey above a poor one, it is proper to inquire what makes the difference. Our correspondent has suggested some of the causes. He mentions, for example, that he has difficulty in rearing good queens in late April or early May, or again in September. What would be true of these months in the North, of course, would not be true for the same periods in the South. Queen rearing conditions in the southern states are from two to three months earlier than in Ohio or Connecticut. The weather in April or May in Alabama or Georgia would be ideal for queen mating if hot or warm weather is a necessary factor in the greatest potency in drones, and right here Mr. Latham may have struck a truth. If that is true, the South has more good mating weather than the North and relatively there would be less of poor queens than in the North. The Senior Editor has been pretty well over the South. He has visited a large number of queen breeders. He has inspected their methods; has seen their powerful cell building colonies; has seen how careful they are in grafting or starting the baby grubs on the road to royalty. It is his opinion that the ratio of good breeders to poor is higher or greater in the South than in the North. Why? The competition is much greater, and the rule of the survival of the fittest crowds out the man who, either through ignorance or incompetency, puts out poor queens. Good queens and good bees bring repeat orders. Poor queens soon put the breeder of them out of business. Under the Agreement, price cutting and consequent poor quality of stock have, to a large extent, been eliminated. Buyers in the North are suspicious of low prices, just as the average motorist is inclined to pass by a station that makes a low price on gasoline and oil. The Senior Editor has found that a low price on gasoline usually means low mileage and poor operation of the motor. —Editor.]

## FIRST CROSS HYBRID BEES

### They Will Store More Surplus Honey Than Pure Breds

About 18 years ago I tried to keep my bees all pure Italian, as many advised, replacing queens of hybrid colonies as I conveniently could. I soon noticed that the colonies with mismated queens gave the highest average in honey production. I then tried different crosses of bees alongside of Italian queens of the same age. The Italians when mated to my own or neighboring Italian drones all averaged up very nearly alike in spite of the fact that queens from some queen breeders made a somewhat better showing than others. In making a first cross between best Carniolan queens and Italian drones

I got about 17 per cent more honey than from pure bred Italians in large hives, and from a first cross of best Caucasians and Italians nearly 20 per cent more honey. Queens tested were all the same age.

I came to the conclusion that as hybrid queens produce colonies that vary greatly and also because of the fact that bees show parthenogenesis, queens should be raised from several of the best colonies of a first cross between Caucasians and Italians. To establish this type of drones in the apiary I would next requeen with pure Italians, then from the best Italian hybrids, next with pure Caucasians, etc. I have followed this process largely the last fifteen years, and feel sure it has been worth while for honey, but not around a commercial queen yard. I never saw stronger colonies than I have nor bees that gave any better results.

A fine working strain of bees can be obtained by continually selecting the best hybrids, but in the long run more definite crosses are likely to prove more dependable. Properly made crosses often retain the good qualities of both parents and are unusually prolific.—R. Selwyn Wilson, Wendell, Idaho.

## WAX MOTH OR BEE MOTH?

### Wax Is Not a Necessary Food Constituent for Wax Moth Larvae

If you look through the old volumes of the American Bee Journal you will find much information about the "bee-moth." The name "wax-moth" has not been used until recently. This change of the name was made because the larvae of this moth feed on combs made of wax by the bees, and it was thought that wax is essential for the life and development of this pest.

Nevertheless, there were some skeptics who questioned the truthfulness of this assumption. Huish, a famous English beekeeper, was convinced that the larvae of the wax-moth eat pollen and chew only the wax which is of no use for them. Later, the scientific investigation of Metalnikov showed that wax-moth larvae can not live on pure wax, since they need other materials, such as proteins and minerals for building up their body tissues.

While working at the U. S. D. A. Bee Culture Laboratory during the summer of 1931, the writer noticed that in combs not guarded by bees, wax moth larvae started their feeding right in the middle of the pollen masses stored by bees in the cells. Later it was observed that in stored combs containing large quantities of pollen, wax moth larvae complete their development in a very restricted area and do not make long tunnels as they do in old combs without pollen. It was also noticed that the larvae worked only in those parts of virgin combs which contained pollen substitutes. In another case they ate bee pupae when a virgin comb with sealed brood was kept in a constant temperature chamber. These observations were suggestive enough to justify an attempt to solve this interesting problem.

A large variety of foods was selected, consisting of powdered dried yeast, corn flour, whole oats flour, whole wheat flour, meat scraps, standard wheat middlings, powdered standard alfalfa hay, fox meal, and a mixture of those materials.

The foods for the wax moth larvae were prepared in this way: Equal amounts of honey and glycerine (the latter was used in order to prevent drying and molding of the food) were mixed and the dry experimental food was stirred in until the whole mass acquired a consistency of that of pollen stored in cells. With such mixtures Mason jars were filled. Cocoons of the wax moths were placed in such filled jars and the latter were kept in a constant temperature chamber heated to 91° F. with the moisture adjusted to 75 per cent. Jars filled with either freshly drawn combs, old combs, combs containing pollen, or bee bread alone served as controls (for comparison).

Wax moths that emerged from the cocoons placed in those jars laid eggs from which larvae hatched. The larvae were allowed to develop on the artificial foods, and after they made cocoons, the latter were transferred to new jars filled with the same kind of food, and the development of the second generation was followed in the same manner.

Wax moth larvae grew on all the foods mentioned previously, but the best growth was achieved in the control jars (except those filled with virgin comb) and on foods which were made of the mixtures of various food materials. There was practically no growth of larvae in the jar filled with freshly built combs.

It is obvious that wax is not a necessary food constituent for the wax moth larvae. In the light of this finding it seems

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that the old beekeepers were not wrong after all, when they wrote about the "beemoth."—Mykola H. Haydak, Division of Entomology and Economic Zoology, University of Minnesota, St. Paul, Minn.

[This agrees with Whitcomb. See page 417.—Editor.]

## WHEY POSSIBLE CURE FOR A. F. B.

### By an European Authority.

Dr. Chas. Brunnich.

In the Polish bee paper, "Posener Bienenwirt," there is an interesting communication concerning the cure of A. F. B. with whey (cheese-running). One had only to pour into the empty cells of one or two combs adjacent to the brood-nest about 1¼ pints of whey. The paper gives the name of a beekeeper and of a teacher at an agricultural school, who had full success with this cure in the case of A. F. B. The inventor of this remedy is a beekeeper in Wolhynia who gave it to the director of the bee department of the agricultural school who had established A. F. B. in four colonies. The disease had been identified as A. F. B. by the bacteriological institute of Bromberg. Six weeks after the treatment all four colonies were all right. The teacher tried the whey without the secret remedy of that beeman with his own and other ill colonies and in all cases the cure succeeded so that he came to the conclusion that the "remedy" was quite a harmless, inefficacious substance which served to the inventor only to earn money.

As the "Posener Bienenwirt" is a well conducted reliable bee paper, the matter can not well be considered as humbug but deserves a serious trial. It could be possible that the A. F. B. is a deficiency-malady as, for instance, pellagra, scorbut and others which have their cause in the lack of some vitamins. Perhaps there are in that waste substance which results in the fabrication of cheese some vitamins or other substances which enable the organisms of the bees to resist the bad effects of A. F. B. so that they may overcome the disease. The "remedy," being exceedingly cheap, would be worth while to try in scientific bee institutes.—Dr. Charles Brunnich, Nidau, Switzerland.

## COMMENTS ON CURRENT ITEMS

### Importance of Drones

The article by M. G. Eldred, on solving beekeeping problems, is about the last word on a complete outfit for a man who produces and retails his honey crop. And yet, will we ever solve all the beekeeping problems? One of the old timers a while ago came to me and asked the privilege of catching some of my drones to let loose in his apiary. He said his bees were not at all strong and there seemed to be a scarcity of drones, not enough to keep his queens properly fertilized. We never spend time with a man like that. We knew him pretty well and his propensity for argument, so we replied, "Certainly, just help yourself; come back for more any time you are shy of drones."

### Roy Rabbitt on Comb Honey

Like Roy Rabbitt, we older beemen can look back to the good old days when we got 100 to 150 sections to the colony filled plumb to the corners, and, with proper management only a small number had any pop holes in the corners. Our basswood has disappeared, alsike clover seed brings a low price and there is consequently a smaller acreage. Formerly we counted on 1000 acres within reach of our bees. We now have to run more of our bees for extracted honey

The late Mr. Hashal of Dunnville, was a producer of fine comb honey. He used to say it took an artist to be a successful producer of comb honey. I guess that is true.

### Dunking Queens

About dunking, we have successfully introduced queens by what Mr. Rahmlow calls dunking. That is a new word to us. We dipped the queen in honey, then dropped her down between the combs. The idea is that by the time the bees had cleaned her up they accepted her. It seemed to work all right. We did not continue the experiment, though.

### Chunk Honey

Emory Ward tells of a beekeeper who worked up a trade by producing the honey in frames, cutting it in chunks, placing it in glass jars and pouring in liquid honey to fill each jar. A lot of southern honey is marketed in that way, but down there they have honey that does not granulate. We gave it a trial and found that unless it was sold soon after placing it in the jars it quickly granulated, even if the liquid honey was heated to 160°. Then it was certainly not saleable. We found a better plan was to fill the jar chock full of cut comb honey, but we soon gave that up, too.—J. F. Dunn, Ridgway, Ontario.

## SPINSTER JANE SAYS—

### The Fickle Weather Man

How the weather-man must have chuckled at his tricks yesterday! The radio had announced local thunderstorms for the afternoon, and we fully expected it, as the weather had been hot and sultry. Showers came in the morning, but afternoon brought not thunderstorms, but the wind veering to the North, and cold weather. We looked for frost last night, and unless it makes another quick change, there will surely be frost tonight, and this June 11! That is precisely the reason why beekeeping is something of a problem in this district.

A year ago, fooled by a few days of summer-like warmth, we took away all packing from the bees which had wintered well, only to lose the greater part of them when the wind swung to the North and blew cold for weeks. Spring in this part of the North is surely fickle. Her smile doesn't mean a thing, though her chilling change does—to the bees. Right now you can see clover tips whitened, because of late May and early June frosts, and no clover is in bloom yet.

### Effect of Severe Stings

We are surely hearing plenty of experiences of being stung. One sees white, nearly all see red, and when John is stung, one sees him dimly through a blue, sulphurous haze. His language is not at all according to Hoyle.

A nephew of mine becomes deathly ill when stung, and a doctor has to be called in. Another, a young lady, when stung, breaks out in big puffy red blotches, and only by quickly administering brandy is she helped. Her family always stock some alcoholic drink in their medicine cabinet for her benefit. Ladies, watch your men-folk after this bit of information. They may develop similar symptoms. Don't let them get away with it if they should. I mean the brandy, of course. I'll admit many females of this day and age imbibe freely at every opportunity, and not as a cure for bee-stings, either. It is one thing to have government control, quite another to allow beverage rooms in every large town, and many smaller ones, where stuff with a decided "kick" is to be had for the asking. Thirsty motorists quench their thirst with copious draughts, and things are no longer under control. Lives are in jeopardy, and who is to blame?

I wrote a certain doctor who writes under the title, "Family Doctor," asking why not try bee-stings for curing rheumatism. The answer came back, "Because I am afraid to try it." Now I ask you, is that person a man or a woman? Can we not correctly guess the sex by that answer?

### Speeding Up

Speaking of modern folk, I saw a very funny thing not long ago at a community party which ended in a dance. A young chap of perhaps sixteen years—though he looked much younger—got his mother up to fox-trot with him. He was small and slim, she was extremely opposite, fat and bunchy. She didn't develop sufficient pep or speed to suit her son, and he kept admonishing her, "Get hot, ma! Get hot!"

It may take another world war to swing the pendulum in the opposite direction and bring us back to normal sanity. But, in the present-day jargon, this year in the bee business, let us "get hot" about our work. It requires pep, enthusiasm, and never-ending vigilance, if we are to succeed, and even bee-stings spur us to greater speed. I speak from experience.

### Stings or Mosquito Bites

Have any of you read "The Keeper of the Bees," by one of your best loved writers? If so, what do you think of the method practiced to find if a person was immune to them or not? I believe bees, if irritated, will sting any one. Humans will strike back when irritable, and are bees their superior in this respect? I would call Honey-Boy immune, as with him, stings are no more than mosquito bites for their effect. And that reminds me, mosquitoes are our greatest pest at present. —Spinster Jane.

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# Editorials

## More Sweet Clover

It is now evident since the Republican Convention that both of the major parties are irrevocably committed to the modified AAA soil conservation policy. That means, of course, soil binding plants such as the legumes and particularly the drouth-resisting sweet clover and alfalfa. No matter which party will be in power, beekeepers will benefit.

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## An Old-Fashioned Clover Year

Not for a number of years (at least seven) has there been so much white and alsike clover. Pastures and lawns are carpeted with white. Countless heads of white clover spring up over night after lawns are mowed.

Even though there is a fairly good acreage of yellow sweet clover in bloom, bees seem to prefer the white and alsike clovers. Yesterday, June 22, a decidedly cool and cloudy day, with the temperature between 60° and 70° F., which is considered rather cool for nectar secretion, our colony in a scale hive made a gain of over two pounds. Rain and warm weather are sorely needed in some regions to stimulate nectar secretion and to lengthen the blooming period.

Colonies that are up to normal strength are storing surplus honey, while sub-normal colonies weakened by adverse weather conditions may store only a partial crop. Weak colonies in the spring build up on the main flow, while strong colonies build up in time for the flow.

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## New Plan of Presenting Institute News Notes

For the next few months, beekeepers and beekeeping leaders will give their story of American Honey Institute activities. The guest editor this month is Prof. H. F. Wilson. Most of our readers know him for his organization work among beekeepers and for his honey research at the University of Wisconsin, as well as his work for the Institute on the Finance Committee.

## Bee Package Agreement Not Affected by Recent Supreme Court Decision

Hearing that the recent Supreme Court decision, especially the one affecting the Guffey Act, might weaken or invalidate the bee package agreement, we wrote to R. H. McDrew, of the General Crop Section of the Agricultural Adjustment Administration, Washington, D. C., asking for an opinion, which we could place before our readers. The following letter received from P. R. Taylor, Chief, General Crops Section, shows that the bee package agreement, which has been in effect for over a year, still stands.

> Receipt is acknowledged of your letter of May 20, addressed to Mr. R. H. McDrew with regard to the bee marketing agreement. I am replying for Mr. McDrew, who is in the hospital at the present time. We will be glad to call your letter to his attention when he returns to the office.
>
> The decision by the Supreme Court is not directly applicable to the situation with regard to marketing agreements under the amended Agricultural Adjustment Act. The majority of the Court in its opinion held that the labor provisions of the coal act were invalid, but specifically stated that it did not rule upon the balance of the Act.
>
> You will doubtless be interested to know that the agreement and order provisions of the amended Adjustment Act were sustained by the Federal District Court at Los Angeles recently and a decision is expected soon from the District Court at Portland, Oregon. On last Friday, May 22, the first case with regard to the regulation of milk was heard by the Federal District Court at Boston.
>
> Progress in securing legal consideration of legislation of this character is naturally slow, but we are making every effort to secure a final decision as rapidly as is practicable.
>
> Yours very truly,
> (Signed) P. R. TAYLOR,
> Chief, General Crops Section.

From this it is clear that the special provision of the bee package agreement has not been affected by any Supreme Court decision thus far. On the other hand, it is believed that its provision will be upheld because there are a number of other farm products that are protected under similar agreements.

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## A Challenge to Orthodoxy

In another column we are starting a department which for the want of a better name we shall call "A Confab." It will be a challenge to orthodoxy, or what

may be the general accepted opinion on any subject relating to beekeeping. As long as the opposing sides do not indulge in acrimony, although differing radically in honest opinion, the "confab" or controversy material will be acceptable.

We need occasionally an iconoclast who will have the courage and fidelity to knock down our images of supposed truth.

Allen Latham, as a careful student of bee behavior, will be the chief actor in this little drama of Confab, and our readers may depend on it, that in any case if his toes are stepped upon, he will be neither ruffled nor troubled if the other fellow steps too hard.

If the reader is confused by our mixture of metaphor or figures of speech he will understand when Mr. Latham begins butting down the images of supposed truth, he will not be like the proverbial bull in the china closet who rushes blindly. He will have a clear look ahead with a smile of confidence, and if he is the one who is worsted he will smile the more.

It should be explained the matter in this issue's "Confab" was prepared while the Senior Editor was in Texas.

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## Wax Moth and Its Control

The "Wax Moth and Its Control," is the title of a new circular, No. 386, of the United States Department of Agriculture, Washington, D. C., by Dr. Warren Whitcomb, Jr., associate apiculturist, Division of Bee Culture, Bureau of Entomology and Plant Quarantine at Baton Rouge, Louisiana. This circular covers the economic importance and source of loss from this pest, its life history and distribution.

Means of control are discussed quite fully. The best control is keeping colonies strong. Added to this should be cleanliness of hives, removal of propolis, burr combs and refuse on the bottom boards. Accidental loss of queens late in the fall may mean the loss of colonies from wax moth damage before the spring examination. Control of the pest by trapping the adults by lights or by traps has not been successful. Fumigation by poisonous gases has proved most satisfactory.

Several different substances have been used; among them is paradichlorobenzene. This is a white crystalline substance which changes slowly into a gas. It is not unpleasant to smell, is non-injurious to people at the concentration obtained when used as directed, and is heavier than air. It is non-inflammable and non-explosive. It kills adults and larvae of the wax moth but is not effective against the eggs. The material is as cheap as any of the fumigants, with the exception of sulphur, and is by far the easiest and least dangerous to use.

Carbon disulphide, or bisulphide, as it is sometimes called, is another substance that is used. The liquid is about one-fourth heavier than water, but it is highly inflammable and the vapor is explosive. It should be used out-of-doors or in well ventilated, or open sheds. Fumes from burning sulphur effectively control the larvae and adults, but are ineffective against the eggs.

Calcium cyanide is effective against the larvae, pupae, and the adults of the wax moth, but can not be depended on to destroy the eggs. It is obtainable either as dust or as fine or coarse crystals, but it is extremely poisonous to people and animals. Care must be taken when using, and the gas must not be breathed.

Taking it all in all, the paradichlorobenzene would seem to be the safest and best and quite as effective as any substance.

The author, Dr. Whitcomb, shows that the larvae of the wax moth do not, as a rule, attack comb foundation. They seem to prefer the old black brood combs, doubtless because there are other materials that act as a food. He also shows that the wax moth may be a friend in disguise in the case of foulbrood, where it gets into bee trees. The moth webs, after the combs are destroyed, fill the cavity once occupied by bees, so that they are not likely to go in. The wax moth is probably the most effective agent against the spread of foulbrood in bee trees, in rocks and other places inaccessible to man.

This circular is one of the best that was ever gotten out and we do not hesitate to say that we will use much of the material in the next edition of our A B C and X Y Z of Bee Culture, along with some work done by V. G. Milum on the lesser wax moth and described in the November issue of this journal, page 662, for 1935.

We shall have more to say concerning the work done at the Baton Rouge Bee Culture Laboratory in a later issue. In the meantime beekeepers would do well to send for circular No. 386 of the United States Department of Agriculture because it is worth reading. (See page 413.)

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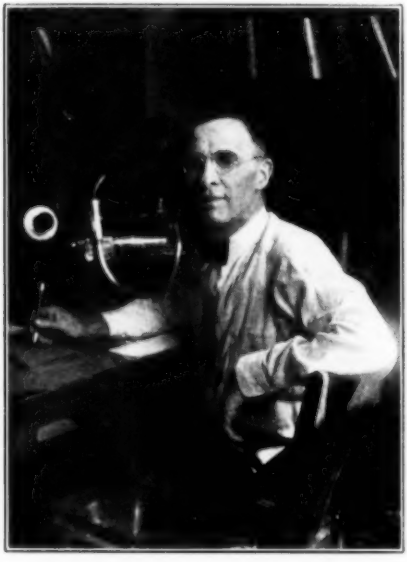
## "Jack"

With the passing of the late Geo. S. Demuth, who had done such fine work on this journal for nearly fourteen years, Medina wired me at Tampa, Florida, asking whom we should appoint to take his place. I wired back, "Jack, of course." This met the unqualified approval of the rest of our staff, and "Jack" stepped into the shoes of the master of bee lore, which place no one could adequately fill. No one felt that more keenly than Jack.

M. J. Deyell, or "Jack," is a modest chap who does not pretend to know everything about bees, although he has been a beekeeper for about twenty-five years. For five years he was a honey salesman,



Jack is as likeable as he is modest, and here he is at his desk as I caught him.

and for two seasons he was a commercial beekeeper in northern Michigan. During the past seventeen years he has managed The A. I. Root Company apiaries of over 1000 colonies for the production of honey; also queens and package bees.

He seeks advice not only of E. R. and H. H. Root, but he consults the field. He calls on the best man he can find to answer certain technical questions.

Although he spends the most of his time at the desk, as here shown, he feels it necessary to be out among the bees. He gets his fingers daubed up with bee glue, and from the actual contact with the bees he comes back enthused with new and old tricks of the trade.

With this background he selects all the copy, writes a part of the editorials, most of the answers to questions, and all the Talks to Beginners.

Mr. Demuth had felt a year or so before his death that he would be compelled, on account of his health, to place the burden upon younger shoulders. The last time I saw Mr. Demuth alive he expressed his prophetic confidence in Mr. Deyell. He had, in fact, made him his "understudy," and so told both the Roots and Jas. I. Hambleton, in charge of the Bee Culture Laboratory at Washington, D. C.

How well Jack has covered his new job, the pages of Gleanings for the last two years will testify. My "boy Jack" (pardon the assumed paternity) needs to make no apology for his work.—E. R. Root.

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## Checking Queens and the Season by Entrance Flights

Colony performance, the strength of the honey flow, and the quality of the queen or queens can often be pretty accurately determined by the flight of the bees at the entrance. If they are rushing in and popping out again in droves of ten or twenty-five at a time, it may be surmised that the honey flow is nearing or on in full blast and that a crop is in sight, provided the weather continues favorable.

It will be noted in this connection that there will be a wide difference in the relative activities in front of the different hives. The strong fliers, of course, have good queens; that means that they are good layers and their hives are full of eggs, emerging brood, and bees of all ages. If one colony shows many more bees rushing in and out at the entrance than any of the rest, it indicates that the mother of those bees should be marked as a possible breeder. If her colony at the end of the season shows a yield much above all the others her value is assured.

By the same token the relative activities of the bees at the entrances from the different queen breeders in the South or elsewhere determine to a large extent which breeder had the best stock. Obviously the one who can and does furnish the best bees for business will have all

(Continued on page 441.)

# From North, East, West and South

**SOUTHERN CALIFORNIA, June 4.**

**Weather:** Cool days and cold nights have been the rule since our last report. Yesterday was eighteen degrees cooler than the same date last year. The average for the season has been from ten to fifteen degrees cooler than last season. Last night we hunted for extra covers. Of course, this is "ideal" weather for one's enjoyment, but not for honey. Some days bees hardly leave the hive and, oh! what a humor they are in when disturbed. No rain has fallen throughout southern California, and there is no likelihood of any more except in the mountain sections.

**Honey Crop:** Late reports from the orange honey crop do not differ materially from that reported in our last letter. Some beekeepers were very optimistic and talked of a case per colony, but when it was harvested and in cans the story was different. Sages and wild buckwheat look thrifty and there is considerable bloom, but colonies are loosing weight every day. Orange honey is reported not up to a high standard.

**Miscellaneous:** Where do we go from here? This has been the question in the minds of many beekeepers who had their colonies on the orange. Some beekeepers hope for honey from the cotton and alfalfa later in the season but there is a period of dearth between the orange and these sources of nectar. Just what to do during this period is a question. Some beekeepers have moved to their summer ranges hoping for a fill-up, but the weather has remained so cool that no honey has been stored and most colonies have lost weight. Every day of cool weather spoils our chances of getting honey this season.

A most unusual and hard-to-explain condition has existed on some of the ranges in southern California this season. For instance, colonies left on one location would not hold their own, while on another location colonies left stored more honey than those taken from the same location to the orange. In a few instances this can be accounted for, but could not have been foretold by any means that we know of.

A beekeeper living fifty miles away had the same experience. His bees were able to reach manzanita while ours were able to get to some rows of eucalyptus. One thing is becoming the custom among the larger producers, and that is to have colonies heavy with honey at all times. A two-story Langstroth hive that weighs 100 pounds is not too heavy. Such a colony seems to have plenty of brood and bees at all times and does not curtail egg laying should we have a few days or weeks of cool weather.

We have had no honey flow since April 17. Buyers have been around but are not offering much over the opening price of orange last year, which was much too low. Some beekeepers held last season and received one and one-half cents above opening price.

**Beeswax:** Beeswax is in good demand at around 20 cents per pound.—L. L. Andrews, Corona, California.

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**NORTHERN CALIFORNIA, June 6.**

**Weather:** June 6 and it is raining. This is not the first shower this month. We had several light rains during May and this is "unusual." What effect this unusual weather will have on the 1936 honey crop is yet to be seen. It will not affect the eucalyptus, orange and other spring flows. They are already passed and the beekeepers have the results. Some have good crops, others poor. Seventy-five per cent of this honey is now on the market. It can not affect the sage crop for that is already a failure. The alfalfa and star thistle crops are in the future.

The honey shortage in other places has caused many beekeepers to move into the alfalfa, the result being a greatly overcrowded condition. It is evident that there will be a loss to the original occupants.

**Honey Prospects:** The recent rains should favor the star thistle crop. It is too early to know just what the result will be. There are new questions arising

in the star thistle district—the plant is a pest to the farmer who is constantly on the lookout for a means of eradication. Fire has failed. The territory of star thistle has been found to be profitable for rice and each year sees more acreage of this crop. Where the land is flooded, as it must be in the production of rice, the star thistle disappears. This season a new condition has developed. After grain is harvested there is a solid growth of star thistle following. This year there has been a good rainfall and beekeepers have looked forward to a good honey crop from this plant only to find that the growth is much lighter than in former years, the condition being only one-sixth the usual number of plants. In a group of six plants there will be one good strong plant and five smaller dwarfed plants. Some of the older beekeepers have concluded this condition indicates a change in the plant life of the locality.

**Beeswax:** The demand for beeswax continues with prices a little better.

**Miscellaneous:** There is another discouraging condition for beekeepers of this district to face—that of overcrowding. This is bound to occur even if the crop is up to the usual standard. We are having failures in so many districts of the state that we can not hope for anything else than overcrowded conditions wherever there is a prospect for honey.

Queen and package bee producers are closing a very successful season.

This will be a good year for our two classes of beekeepers to make a test of their systems. The smaller class will likely continue with good outfits, bees in first class condition at all times. This will include young queens. The beekeepers will be readers of bee literature, including the journals, and they will be members of the state association, working for the good of all interested in a great industry.—Cary W. Hartman, Oakland, California.

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### UTAH, June 4.

**Weather:** May, in Utah, has been one of the driest in the weather records. The temperature has also been very extreme. A few days of record breaking heat was followed by a spell of unusual cold. Due to these sudden changes in the weather, the growth of bees in colony strength has been appreciably retarded, since the brood started during the hot periods could not be covered during the cold nights that followed. In contrast to the arid condition of May, the first few days of June have brought more moisture to the state than is usual for the entire month of June. This may compensate in some degree for the shortage in May.

**Honey Crop:** The intermittent condition of the weather has also had its effect on the crop of early honey. It is often the case that the honey taken from the fruit and dandelion bloom is in the way of the lighter grades that come later to make up the bulk of the season's crop, but this year the bees have not been able to work full-time and have consumed during the cold days what they gathered while the heat was on.

The first crop of alfalfa as usual is being cut before it blooms, so there will be little extracting done before the second crop comes on. Of course, in the southern part of the state, where the altitude is lower and the climate warmer, some of the first crop alfalfa was permitted to bloom and the bees there gathered some honey. If the present storms continue it is possible that there will be quite a little honey produced from the second crop of alfalfa.

**Market:** All large stocks of honey are sold and out of the state. The price of honey is, therefore, a little better than during the winter months. Beeswax is also moving up, the supply being adequate. The average price at present is about 20 cents.

**Miscellaneous:** The work of inspection for disease is going on in most parts of the state. Quite a rigid policy of inspection that has been carried out during the past few years has made it possible to reduce the incidence of American foulbrood. In a great many cases infected apiaries were rigidly inspected and were properly cleaned up by burning. Some of the larger beekeepers who were properly equipped to handle disease were permitted to control American foulbrood by shaking.

In the majority of cases beekeepers are co-operating fully on this program. We are still troubled with a few small beekeepers who usually have a few hives as a sideline and who are not qualified to take care of them properly. The present shortage of honey in the hives seems to have exposed to use such infected food as may have been lying dormant through the years. This may partly explain the cause of a great number of newly developed cases of American foulbrood in some in-

stances. At the present time the state is being flooded with large numbers of migratory bees. Quite a number of apiaries moved out last fall and now they are coming back with an increase of from one to three hundred per cent.—W. H. Hendricks, Salt Lake City, Utah.

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**WISCONSIN, June 1.**

**Weather:** Sunday, May 31, was a very important day in the spring season of 1936, because it brought to portions of the southern part of Wisconsin a heavy rain that meant a greatly improved outlook for nectar flow in June and July. There had been no rain in the vicinity of Madison for a long period, and the seed in the ground was in practically the same condition as when planted. The ground was packed hard and the clay soil badly cracked. Several of our beekeepers had decided that the prospects for nectar flow were completely nil, and one beekeeper remarked that if we did not have a good rain within ten days, the white clover could not yield nectar. The rain continued through a good part of the night, and hope has been revived anew among our beekeepers.

**Honey Flow:** It is not possible at this time to give any indication of what the honey flow will be for Wisconsin, but we hope to have some definite information by the time the next report is due.

**Miscellaneous:** Reports regarding winter losses continue to show the same trend. Beekeepers who were careless last fall and did not attend to their bees suffered serious losses. But wherever careful attention was paid to the winter stores, the bees for the most part came through in excellent condition. Colonies wintered in the bee cellars suffered least and gave strong proof that winter-cellaring can not be crowded out by outside packing for the beekeeper who has a cellar which is convenient to reach so that he does not have to worry about the heavy work of carting the bees in and taking them out. With bees packed out-of-doors, top-entrance colonies seem to have stood the winter better than those with bottom entrances.

Funds have been provided to reorganize the honey laboratory and extracting room at the university. This work will be undertaken shortly after the first of July. —H. F. Wilson, Madison, Wisconsin.

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**TEXAS, June 1.**

**Weather:** The weather during the month of May began by putting an end to the early honey flow. The drouth which brought on an unprecedented honey flow from guajilla, catsclaw, and mesquite, was ended by dry weather which even these plants could not endure. The end of the first week in May brought more than one inch of rain which was general throughout the state. This rain started an epidemic and the remainder of the month was wet, cold, and cloudy. This condition ended the surplus honey flow but has put all plants into such a condition that a heavy summer honey flow is insured.

**Miscellaneous:** The date for the annual meeting of the Texas Beekeepers' Association is Monday, July 20. The first two days will be the regular beekeepers' meeting. The third day will be given over to a school of beekeeping which is to be conducted as a part of the A. & M. short course. All beekeepers are urged to stay through the three days and to take part in the school of instruction. As the International Conference of Beekeepers will meet in San Antonio, November 22 to 25, and as the Texas Beekeepers' Association must be the entertaining committee, every beekeeper should feel his responsibility in maintaining the reputation of the state. All beekeepers are urged to come to the annual meeting and help make preparations for entertaining beekeepers who will be the guests of the Lone Star State.

Dr. Don O. Baird, of the Sam Houston Teachers' College, Huntsville, is working in connection with J. A. Moore of the Agricultural Section of the Centennial Exposition at Dallas on what will be one of the largest and finest displays of beekeeping the state of Texas ever assembled.

Beekeeping is attracting its share of attention by the Centennial Exposition at Dallas, Austin, and San Antonio, the Honey Festival at Uvalde, and the beekeeping divisions of a number of local historical pageants which are being staged.—H. B. Parks, San Antonio, Texas.

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### ALABAMA, June 9.

**Weather:** Weather conditions have gone from one extreme to another this season. The early spring was favorable. Bees built up rapidly and many colonies were preparing to swarm before the package season started. About April 20 conditions changed and the weather turned cold, wet and windy. This played havoc with queen yards and some colonies actually starved before they could be fed. All shippers were behind with their orders and queens were scarce. Naturally queens reared under such adverse conditions were not so good as they would have been if conditions had been better. Early in May the weather cleared, and shippers began getting off a normal number of packages, but they were so far behind that they did not catch up with their orders till late in May. During late May and early June the weather was quite dry but a fine rain fell on the evening of June 8.

**Colony Development:** After the weather cleared the bees built up rapidly and colonies are in much better condition than they were at this time last season, despite the number of packages that have been shipped.

**Honey Crop and Prospects:** The early spring flow was naturally cut short by the bad weather, but colonies in favorable locations have almost enough for winter stores if they succeed in making a living through the summer and fall. Sweet clover is now in full bloom and is yielding well. With favorable weather conditions colonies located in the sweet clover area should get enough for winter and possibly produce a small surplus. Package shippers have about quit hoping for surplus honey as they figure that they are lucky if they get enough for winter stores.

**Miscellaneous:** The demand for packages and early queens has been the greatest in the history of the business and all shippers have been forced to turn down some business and practically all of them have shipped more packages than ever before. The loss of packages by express have been higher this year than last, although losses have not been very serious. Losses in 1934 were extremely heavy and the express companies made a special effort to get bees through alive in 1935, and practically no losses occurred. Many shippers did not have a single loss large enough to put in a claim for.The problem of losses of packages appeared to be solved, but it returned again this season. Whether the express people are not making the effort that they did in 1935 or the cold weather in April contributed to the loss, we do not know. Truck shipments are increasing and are usually successful, but the shippers prefer express if the losses do not run higher than they did this season.—J. M. Cutts, Montgomery, Alabama.

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### BRITISH COLUMBIA, June 5.

**Weather:** April in many respects made up for the delinquencies of March; except indeed for the first week. On April 1, quite contrary to British Columbia traditions, we had a heavy frost and between the 1st and 5th a fall of snow, which wintry conditions took us well on toward Easter. However, from then on the weather was all that could be desired and the mean temperature for the month was 50 degrees while the rainfall was 2.52 inches. Temperature for May was 55 degrees while rainfall was 2.06 inches. From all this it will be gathered that the bees had an unusually poor start.

**Honey Prospects:** As mentioned, up to Easter there was no indication of growth of any kind and it looked as though the seasons would be abnormally late. But after Easter things made a bound forward and everything seemed to come to life. Fruit trees were literally covered with bloom and all the time it lasted the weather was ideal for the bees and they certainly took full advantage of it. For this reason there should be a bumper fruit crop of all kinds. Unfortunately, many colonies were not nearly up to strength, and it is only where they were in good condition that the ideal conditions could be of benefit.

The growth in so short a time is abnormal and it is estimated that clover and hay crops are far above the average already. Every growing thing seems to be hurrying up to make up for time lost earlier in the year. For over two weeks the weather has been generally dull with rain and occasional hot days, consequently when clover blooms it should be in excellent shape. If we get hot and dry weather for the remainder of June the nectar should be rushed in from all sources.

**Condition of Colonies:** Here's the rub! So many colonies are not at full strength. Since fruit bloom there has been not only a dearth of nectar but also the necessary weather conditions to make use of what there is. Many beekeepers to their consternation have had to feed some colonies. The winter losses were unusually heavy all over British Columbia. Some districts in the Okanagan were badly hit with spray poisoning and the weak colonies left were soon cleaned out by a plague of wasps, or yellow hornets. The inspector reported apiary after apiary in these districts with very few colonies left. If the honey flow is late all may be well, but at present to all appearances only the very strong colonies will give a good account of themselves.

**Miscellaneous:** The editorial in May Gleanings on bee diseases is very timely. While it is a condition which must be guarded against and all due precautions taken, it is unnecessary to broadcast stories which the uninitiated can not understand. As a matter of fact, it is generally the amateur who talks in this would-be important and unwise way, and, as the editor points out, it should not be discussed where the bee-ignorant reporter is present. Why not call it colony pest or blight? We think nothing of strawberry weevil, or peach curl, or even potato blight, and they are just as deadly in their effect, so why not talk of brood germ or colony blight instead of "diseased" colonies? It is only natural that the uninstructed should jump to the conclusion that the honey from a diseased colony should also be diseased. This matter should be taken up seriously by beekeepers and see that this foolish talk of "diseased" honey is nipped in the bud.—Florence A. Greenwood, Vancouver Island, British Columbia.

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### TENNESSEE, June 4.

**Weather:**. We have had no rain over practically the entire state for 55 days and spring honey plants are almost beyond recovery, even should rain come today.

**Miscellaneous:** There was approximately a 40 per cent winter and spring loss of colonies due partly to severe drouth last fall and a failure to fill food chambers on the 1935 spring flow. Those who doubled up their colonies last fall on account of short stores due to drouth, by the newspaper uniting plan, report rousing colonies this spring. These large colonies were able to gather enough honey on the early spring flow to tide them through several more weeks of drouth. Many of our beekeepers in this section are talking of fine experiences with two full-depth Langstroth bodies for the queen and brood chamber and full-depth bodies for extracting supers. Many of us here in Tennessee have grown up in the presence of the single standard body as a brood chamber with one shallow super for surplus, sometimes two shallows, and have not thought much about the possibilities of obtaining rousing colonies and big crops by use of larger queen space and super space. On the old basis some beekeepers report three or four swarms in the air at one time.—H. L. Rushing, Nashville, Tenn.

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### VERMONT, June 6.

**Weather:** During April, weather has been very cold and wet. This ended suddenly the first of May and for two weeks we had hot summer weather. The daily temperature of 60° to 80° made all vegetation jump ahead two weeks before its usual time. Apple orchards were in full bloom the second week in May instead of the last two weeks. Orchard men had a good apple crop in sight, but on the 14th, the wind changed to the north and on the morning of the 15th, the temperature dropped to 24°. The apple crop is completely gone, except for a few orchards near Lake Champlain, where a few blossoms escaped damage. Most of the 5000 acres of orchards in the state will have a 95 to 100 per cent loss. Our famous McIntosh apple will certainly be a luxury this fall.

Practically all vegetation was damaged to some extent by the frost. Even alfalfa and clover, and big trees such as elms and maples, had leaves frozen. The cold continued until the first of June and up to the present day it has been a week of clear summer weather.

**Bees:** In spite of our past cold winter, the winter loss has been small, less than 10 per cent. The cold spring, however, has been rather hard on the bees. Honey was short and they had to keep a compact brood nest to prevent chilling of the

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brood. With liberal feeding and leaving on the packing they have built up in good shape for the honey flow.

**Honey:** The dandelion flow was again light and short, a repetition of the past four years, when it hasn't yielded enough to keep the bees going until clover. The past few days honey has started coming in again, mostly from thorn apple and devil's paint brush. White and alsike clovers are starting to bloom in good shape and in another week white honey should start coming in. It will be another two weeks before alfalfa starts to bloom. With the abundance of clovers and moisture, all we need is some good honey weather for the next six weeks to get a good crop of honey. We certainly can use it with the market short of honey, and at the rate it has been moving the past season, it will take a big crop to supply the trade. In order to keep our trade it is certainly most essential to keep it supplied.—Charles Mraz, Middlebury, Vt.

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**IOWA, May 29.**

**Weather:** It seemed last winter with the unusual amount of snow that there never would be a shortage of moisture again in this state, but many areas are now reporting a drouth which will soon be serious unless there are rains for relief. Rains have been more frequent in the western part of the state, but dry conditions have been reported in the eastern half. A serious drouth would be untimely following the disastrous years and a spring when the optimism of the beekeepers resulted in extensive preparations for a honey crop. White Dutch clover seems to be yielding quite profusely in all areas where it is reported and it is interesting to know that the distribution of the white Dutch clover seems to be much more extensive this year than for many years past. The late spring season with the consequent retarded development of colony strength does not seem to influence the blooming period of the major summer honey plants. The yellow sweet clover, which is increasing in distribution in this state, has its blooming date this year at approximately the normal time.

**Miscellaneous:** The season of 1936 has seen an unprecedented demand for package bees on the part of producers of this state. This demand was created early in the season by a desire on the part of many to increase their holdings for honey production purposes. The second demand for package bees was created when the seriousness of the winter losses was determined. It is unfortunate indeed that the weather conditions were such throughout the areas where package bees are produced that this demand could not be met. It is realized that these conditions were beyond the control of the southern shippers, and the northern producers have been so anxious to get package bees that they have accepted them at any date on which shipment could be made. The question now naturally arises as to how late it is possible to receive a 3-pound package of bees under our Iowa conditions and develop it into a profitable honey producing colony. The results of this season are going to be watched with a great deal of interest and a few co-operators have already indicated their willingness to furnish the records of the season on this phase of the problem.

There is considerable interest in the inspection service this year. The demand for work has exceeded that of former years and again it is unfortunate that the late season delayed the program of work. It is interesting that producers in more counties are becoming interested in the co-operative effort of inspection through the securing of local funds as is permitted under the law. The set-up of the inspection service in this state is such that it will never be in a position to handle entirely all local situations. It has been the policy of the state administrative officers to demand local co-operation in order to carry on an area clean-up campaign. The state office serves as a co-ordinator for this work. Local funds are used only for maintenance of the inspector while in the county.

The Woman's Auxiliary of the State Beekeepers' Association will sponsor a summer broadcast on honey. This will take place over WOI during the Homemakers' Hour the last week in July. Those who are interested should get in touch with a definite time and arrange for local co-operation. This program is in response to a request of the American Honey Institute.

Producers of Iowa will be especially interested to know that the Iowa State Fair has established a honey department in

charge of a superintendent. This will permit entries to be made by shipment with the assurance that such entries will be properly displayed and properly brought to the attention of the judge and properly prepared for return shipment, or disposition, if so instructed. It is hoped that this recognition on the part of the fair officials will receive the hearty co-operation of producers to the extent that a large number of entries will be made this year. It is also planned to have an extensive educational exhibit in conjunction with the honey department. Fair officials have asked that this be done and it offers an opportunity for considerable missionary work, not only among producers but among consumers.—F. B. Paddock, Ames, Iowa.

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**ONTARIO, June 10.**

**Weather:** A month ago the weather was humid and unusually warm for that time of the year. Today, June 10, we have similar conditions, at least locally. Shortly after the early heat wave in May, we had cool weather with heavy night frosts. Naturally this affected the clovers and other forms of vegetation. I understand that in eastern Ontario frost was much heavier than it was near Toronto.

**Honey Flow:** The cold weather during dandelion and fruit bloom affected the honey flow. In many cases bees have had to be fed to carry them along till clover opens. Feeding has been fairly general and we have had our share of this work and expense. A few apiaries required no feeding, while others have had to be nursed along all spring. Our apiaries located near large willows have without exception needed little if any feeding. In my opinion, willows are the surest source of spring nectar that we have here in Ontario. The large willows grow very rapidly. Near us we have many trees that we set out only a few years ago and they are now quite large and a real help to the bees every spring.

**Honey Sales:** Honey sales are very quiet at present and it is not likely that there will be much improvement until the new crop comes, as many consumers have the erroneous idea that honey wintered over is not so good as new honey. Last summer we used a 60-pound tin of honey that had been carried over for two years in our honey house basement and it was just as spicy as when first extracted.

**Beeswax:** Beeswax is in keen demand at greatly increased prices, judging from bids I have had, even though we have none to offer. Last week a friend of mine was offered four cents per pound more than we obtained for ours and we thought we had got a pretty fair price.

**Miscellaneous:** Here in York County we have had nice showers lately and clover looks good. We have bees in Victoria and Wentworth counties, and it was much drier there than here at home. But the season is young yet and we may have rain shortly. Prospects are fair where bees are in good shape, but from what I have heard from others and from observation, bees seem very uneven in strength and very short of stores in many apiaries.

Once more I find myself taking issue with men no doubt better able to offer advice than I am. This has to do with the question of sugar feeding to bees as it affects or causes the trouble usually called dysentery. I do not hold any brief for sugar feeding and sincerely wish that we could avoid feeding sugar altogether. But the fact is we do not know how to do that at present and we expect to continue feeding some sugar as long as we are in the business. Where one has only one or two apiaries I can understand how it is possible to transfer heavy combs to brood nests in the fall, but with a large number of bees it is simply beyond our ability to do this. Even when using food chambers we have found that the greatest winter death-trap is a colony that has a full shallow super of honey and is light in the main brood nest. So even with food chambers in use we find that we have to feed.

As to sugar syrup causing dysentery, the idea is so foreign to our rather extensive experience that I can not understand such a statement being made and I feel that other commercial beekeepers will know just how I feel about it. While still calling myself "young," yet I find that for over fifty years we have fed bees every fall and in all that time I can not recall having had a colony that was in normal condition and had been fed well with sugar syrup develop dysentery.—J. L. Byer, Markham, Ontario.

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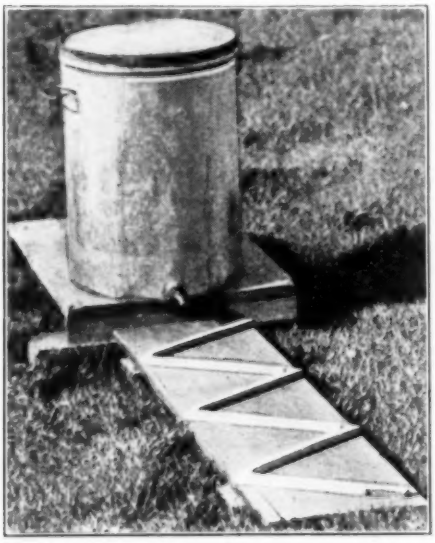
# Heads of Grain from Different Fields

### Inexpensive Bee-Waterer

A suitable supply of water should be made available for the bees, not only because they need water, but that we may keep the peace with our neighbors. Unless so provided for, bees become a nuisance around lily pools, hoses, and outdoor faucets, and a menace to livestock at their watering tanks. Expensive equipment is not necessary in providing a supply of water. A most satisfactory waterer may be assembled using a discarded hot water tank, gasoline drum, steel oil barrel or



**The bees find a foothold on the cleats which also prevent the water from running off too fast.**

large can and a little lumber. The receptacle is fitted with a spigot which is adjusted to drop water slowly upon the inclined drip board. This board is provided with cleats to distribute the water. A liberal coating of beeswax applied to the board before being put to use will prevent warping. If this precaution is omitted the cleats should be fastened on with screws. Underneath the lid of the tank a wire screen is attached through which the water is poured to assure removal of any dirt or foreign matter which might clog the spigot. If an open tank is used burlap tied securely in place will serve as screen and cover. If a hot water tank is used it should be supported in a slanting position and the holes at both ends should be plugged. A spigot may be fitted at one end or a slotted plug may be used to drop water slowly upon the drip board.—Benjamin Nielsen, Aurora, Nebraska.

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### Effect on Cotton Dusting on Bees

With the many recent reports of bees killed by dusting fruit and vegetable crops in other parts of the country, it may be of interest to record the effect on bees of cotton dusting. At Leland, Mississippi, in a typical Delta section, Mr. J. W. Sprott had only three weak colonies left last year out of 100 colonies. The bees were greatly weakened by the regular boll weevil poison applications throughout the summer and the death blow was delivered when the cotton was heavily poisoned in the early fall to destroy leafworms. The year before, Mr. Sprott saved only one colony out of a yard of 25 located about three miles from a field that was poisoned. Since most of the Delta cotton is poisoned in years of heavy weevil infestation, very few safe places for beekeeping remain in this section which is naturally splendidly adapted for bees.—Clay Lyle, State College, Mississippi.

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### An Important Court Decision

The following court decision is of interest to beekeepers: "The courts are not prepared to hold that bees are generally vicious, and that their owners are charged with notice of that fact, but take the opposite view, that the usual propensities of bees are not vicious, and that proof of viciousness be required and notice thereof be sent to the owner in each case. In case of injury by bees, the plaintiff must show the bees to have been vicious and in the habit of stinging persons and animals whenever opportunity offered, and, further, that the owner had been informed of this propensity, and had neglected to correct it or to remove the bees. McDevitt, P. J., in Allman vs. Rexer. (Common Pleas, Phila. County.)" This is plain, and gives the bees the same standing as other domestic animals, which bee owners will recognize as good common sense.—A. L. Timblin, Omaha, Nebraska.

### Hidden Wax Moth Larvae

I have often wondered why the wax moth was always ready to pounce upon neglected combs, when for years there had apparently been no opportunity for them to breed. Now I think I know. The other day I removed a bottom-board which to my certain knowledge had been in constant use by a good colony of bees ever since it was part of a brand new hive some eight years ago. Scattered over it were nubbins of wax, smooth and black and shiny. They looked as if they had been undisturbed for years. But as I scrapped them off, I was astonished to find live white warms concealed under a number of them, one worm to a lump of wax. They were partly in the wax and partly down in the wood, except that one small one had gone so far into the wood that it was uninjured by the scraping. Doubtless they were larvae of the wax moth keeping the race going while awaiting a chance at some unguarded combs.—Flora McIntyre, Pasadena, California.

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### Catnip Leaves Quiet Bees

One day last summer while working the bees they were quite cross. It was during the honey flow and I happened to get my hands sticky with honey. Not having any water near by and being only a short job, I grasped a handful of catnip leaves growing nearby to wipe my hands on. From then on, until the scent left my hands, the bees seemed to be more quiet. Later I tried it again with the same results. It may be an idea, and probably just imaginary, but try it sometime and see what results you have.—Frank F. Johnson, Milwaukee, Wis.

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### Amateur Radio Helps Beekeeper

One night recently a beekeeper in Wilmington, Delaware, who is also an amateur radio operator, contacted an amateur station in Medina, Ohio. During the course of the conversation the Delaware man asked how to hive a swarm of bees that had clustered in the high grass. He was given the necessary information by the Medina radio operator, who, by the way, is also, an experienced beekeeper.—Karl Rau, Medina, Ohio.

### Seven-Year Per Colony Average

From a tabulation compiled by the Bureau of Agricultural Economics, U. S. Department of Agriculture, Washington, D. C., dated December 2, 1935, which includes the estimated yield of honey per colony for all of the states, from 1928 to 1934 inclusive, we have worked out the approximate per colony average production for the various states for this seven-year period. It will be noted from the following list that there is a wide variation in the amounts, from 17 pounds to 100 pounds per colony average.

| | Lbs. | | Lbs. |
|---|---|---|---|
| North Dakota | 100 | Maryland | 31 |
| Montana | 100 | Illinois | 31 |
| South Dakota | 71 | Texas | 30 |
| Minnesota | 67 | North Carolina | 30 |
| Wyoming | 65 | Virginia | 30 |
| Idaho | 65 | New Jersey | 29 |
| Wisconsin | 61 | Connecticut | 28 |
| Iowa | 61 | Kentucky | 27 |
| Nevada | 59 | South Carolina | 27 |
| Michigan | 56 | Oklahoma | 26 |
| Arizona | 48 | Kansas | 25 |
| Louisiana | 46 | Florida | 24 |
| Washington | 42 | Missouri | 24 |
| Utah | 41 | Rhode Island | 23 |
| Ohio | 40 | Indiana | 23 |
| Oregon | 40 | Maine | 22 |
| Colorado | 40 | West Virginia | 21 |
| New York | 40 | Pennsylvania | 19 |
| Nebraska | 39 | Arkansas | 19 |
| New Mexico | 38 | Mississippi | 18 |
| California | 36 | Tennessee | 18 |
| Georgia | 35 | Massachusetts | 18 |
| Vermont | 35 | Alabama | 17 |
| Delaware | 32 | New Hampshire | 17 |

The sheet of tabulated information referred to, which also contains the estimated number of colonies and estimated production for all the states, can be secured by writing H. J. Clay, Bureau of Agricultural Economics, Washington, D. C.—M. J. Deyell, Medina, Ohio.

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**Elliott Elmo Curtis, son of Elmo Curtis, queen-breeder of Graham, North Carolina.**

# Just News

The New Jersey State Association will hold a meeting at the apiary of Mr. Albert G. Hann, at Glen Gardner, July 9.

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The Montgomery County (Ohio) Association will hold a meeting on Saturday, August 1, at the home of Walter Rhodes, located two and a half miles southwest of Brookville on Tom's Tun Road. An attractive program is being prepared. It is hoped E. R. Root will be present.

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The South-East Kansas Beekeepers' Association will hold their seventh annual picnic and program at the home of E. L. Yount, three miles north of Chanute, on highway U. S. 59, on Sunday, July 19. A basket lunch will be spread at noon and a program of beekeeping subjects and music is planned in the afternoon.

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Farmers' Bulletin, No. 8, entitled "Package Bees and How to Install Them," by C. B. Gooderham, Dominion Apiarist, Ottawa, Canada, just off the press in May of this year, is now available at the Bee Division of Department of Agriculture, Ottawa. This bulletin will be of special interest to Canadian beekeepers.

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The annual convention of the Kansas State Beekeepers' Association will be held at Topeka, July 26, all day, at Washburn Park. O. A. Keene, President of the Association; Dr. R. L. Parker, State Apiarist, also Professor of Apiculture, and H. W. Stewart, Secretary of the Association, are the main speakers.

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Don't forget the big San Antonio Beekeepers' Conference, November 22, 23, 24, and 25. Save up your vacation period until that date. You will be well repaid if you go down into the great Southland and see what it is like. Tourist stopping places on the way cost about a dollar per night for two. Rates at Crockett Hotel, San Antonio, where the conference is to be held, can be had for $1.50 for one person; $2.50 for two, or $5.00 for four, with bath. Other stopping places in the city can be secured for $1.00 for two. So save your pennies and dimes and take in the great conclave of beekeepers in San Antonio. We have just received notice that the proposed excursion of beekeepers into the Rio Grande Valley and into Mexico, lasting a week, will cost $40, instead of $35, as announced in the last issue.

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A part of a letter from Prof. J. M. Robinson, Auburn, Ala., Managing Director of Marketing Agreement and License for Shipping Package Bees and Queens, reads as follows: "It might interest you to know that through the investigation of the Field Investigation force at Washington 92 per cent of last year's shippers have cleared themselves with the requirements of the Bee Marketing Agreement."

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Mother M. Eustacia, O. S. B., of Crookston, Minn., passed away May 29, 1936. She was known throughout U. S. for being a pioneer in beekeeping among the Catholic sisterhood. As a result of a short course which she, with two other sisters, attended in 1914, the sisters, under her leadership, started beekeeping on a large scale in the sweet clover region around Crookston. They adopted honey as the only sweet in their convent and orphan asylum for more than 200 members. They built a modern honey house, also an up-to-date candle factory, and a choice bakery for fancy honey products, on which they have won premiums throughout the U. S. They had some 1000 colonies. The sisters will continue the work inaugurated by Mother Eustacia.

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The program of the Ohio Beekeepers' summer field meeting, August 13, 14, and 15, at Delphos, Ohio, is shaping up rapidly and includes many intriguing features. Michigan and Indiana beekeepers are invited to this meeting. A tour on August 13 includes visiting a honey-filtering plant and also commercial apiaries where comparisons will be made on the productivity

(Continued on page 436.)

# American Honey Institute Notes

Guest Editor
**H. F. Wilson**
University of Wisconsin, Madison.

### Northern Losses Improve Package Shippers Market

The beekeeping industry today is a veritable bee hive. Increased movement of honey encourages beekeepers to set up additional colonies as well as replace winter losses. According to the March News Letter the demand for bees this spring is greater than the supply, and some beekeepers are finding it difficult to get package bees early.

Reports from Ohio, Indiana, and Illinois are that the weather has been exceptionally favorable for both bees and honey plants.

Minnesota reports many package bees brought in to replace heavy winter losses. Many package bees have been shipped to the Red River Valley of Minnesota and North Dakota, and there is every reason to believe that conditions will be ideal for a crop this season.

Wisconsin has recently been visited with rains that have increased activity among the beekeepers and they are impatiently awaiting the beginning of the honey flow.

Reports from the northeastern states report losses of 40 to 50 per cent, but the bees have been building up fast on spring bloom and a fairly good season is expected.

In the southeastern area bees are reported as being in good shape and bringing in nectar fairly well.

### Texas Beekeepers Are Happy

In Texas everything points to a very fine meeting at San Antonio and Texas beekeepers should turn out strong, for the best crop in many years is reported.

The beekeepers in the Uvalde section have been so happy over their honey crop that they put on a special celebration. The Institute extends congratulations and hopes that you will not forget them when you are counting your profits.

Let's make the Institute attendance at San Antonio the largest in history.

### Among the Queen Breeders and Package Shippers

The Institute office has a list of 152 queen breeders and package shippers in the United States—many of these are not members of the Institute—may we ask why? Has not the package business increased proportionately to the increased demand for honey and is not the success of the queen breeders vitally tied up with the success of the Institute?

### New Members and Renewals

Between January 1 and June 1, 1936, one hundred new members have come in, but in the meantime two hundred and twenty-five members have failed to renew their subscriptions. Every one of these has now been sent a notice—how many follow-ups should be sent out? Just remember that every renewal at an early date saves the Institute staff money and postage. Either we must have more renewals or interested members must see that new members are secured.

Mr. Lee Faneuf, of White River Junction, Vermont, writes: "I feel that the service rendered by the Institute during the past year was worth many times the amount of my membership."

Mr. Fred Kaiser, of Erie, Pennsylvania, writes: "Thank you for the reminder. I am sorry I forgot about it and am glad you wrote me."

From Iowa, Mr. John A. Johnson, of Pomeroy, writes that he has been continually on the Honor Roll and intends to stay.

From Utah: "Want to be on the Honor Roll in any way that will encourage others to contribute."

From way down in Texas, friend A. W. Bulay, "Am on it and mean to be on it every year."

### The Annual Report

The Institute office has received some very nice responses on the annual report (copies are still available for the asking) and we note that one member is glad to see that so much has been accomplished in one year. Another beekeeper states "when individual beekeepers suggest to the customers different ways of using honey with Institute recipes, sales are easy."

### The Institute Honor Roll

Recently a suggestion has been made concerning the listing on the Honor Roll. A Wyoming beekeeper would like to have the listing run from June to July, but it is easier for the Institute staff to prepare the report in December and January. June and July is valuable time needed in getting ready for the fall market. We would appreciate your suggestions.

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# Gleaned by Asking

THE EDITORS

### When to Remove Surplus Honey

Question.—Should supers of honey be extracted before combs are all capped, or should I wait until all cells are capped?—J. R. McCall, New York.

Answer.—Combs of honey may be extracted when they are about two-thirds or three-quarters capped over. If the combs are not fairly well capped over when the honey is extracted it may sour. It pays to wait until the honey is properly cured by the bees before extracting it from the combs.

### How to Get Raised Letters on a Comb of Honey

Question.—How can I get letters on comb so that after the bees have drawn out the comb and capped it, the letters will show plainly?—Hays Edley, Kansas.

Answer.—It is very difficult to get the bees to build letters on the face of comb honey. It can be accomplished, however, during a good season when the flow is strong and when the bees are crowded for storage room. The letters will necessarily have to be 1½ to 2 inches tall, and for that reason you can not very well build letters in a section of comb honey, but you can take a whole Langstroth comb and put in one and possibly two words. To do this, take a ⅝-inch board planed on both sides and with a jig saw cut out the letters of the words that you desire to use. If it is an enclosed letter like O, the center piece as in O must be held in place by wires. This board is then placed flat against the new comb, leaving a bee space between. If the bees are crowded for room they will build the combs outward into the vacant spaces formed by the letters and then cap over the comb. You must not be disappointed if some of the letters are defective. You may have to make three or four boards in the manner described before you will get a good one with the letters properly filled out by the bees.

### Surplus from Locust

Question.—I would like to know what time during the day the white flower locust trees produce honey in this locality.—Charles R. Williams, Pennsylvania.

Answer.—When locust yields honey under the right conditions, it usually secretes nectar throughout the day. Locust, however, is very uncertain about yielding nectar, as many years it yields practically nothing. In some cases it is hard to account for its not doing so. Windy weather will frequently blow the blooms off almost immediately after they open, or, if the weather is excessively hot, and there is not much humidity in the air, locust seems not to yield.

### Hard Granulated Honey

Question.—How can honey be granulated into a hard block? Honey here does not bring a very good price and I want to find some way of making it into a hard block.—Mason E. Taylor, Guatemala.

Answer.—Some honeys will granulate more easily and harder than others because of the dextrose content. Where the dextrose content is high and the levulose content relatively low, granulation will often proceed to the point where the product is so hard that it has to be cut with a stiff knife. This is particularly true of the alfalfa of the western states. There are other honeys where the levulose content is high and they will granulate a little or not at all, or make a semi-liquid soft creamy honey. Some years ago Mr. R. C. Eaken, of Colorado, poured his alfalfa honey into bags that would hold a pound of granulated honey. These bags were coated with paraffin, inside and out, and so were liquid tight. They were allowed to stand in a cool atmosphere until the contents granulated solid. The tops were then folded down and they were ready for market. The containers were comparatively cheap but when they were placed in a warm atmosphere, especially if there was a humid atmosphere, the honey would soften, become sticky, and draw insects and dust. Another method is to take a 60-pound can of solid granulated honey, strip the tin off the top and sides and cut the honey up into blocks of suitable size with a butter cutter, employing the use of very taut wires about No. 16 in size. These wires are slowly pushed through the block of granulated honey lengthwise and endwise, making cakes weighing about a pound each. They are then wrapped in paraffin paper and finally put into cartons. These granulated cakes, or bricks, of honey become soft if kept too long on the grocery shelves.

### Bees Disinclined to Go Through the Queen Excluder

Question.—In each of my four hives the queen insists on laying in the supers. To curb this, I have placed between the hive body and

the super a queen excluder, but find after this has been on three days very few bees enter the supers through the excluder.—J. D. Roddey, North Carolina.

Answer.—If your colonies are of the proper honey-gathering strength, boiling over with bees, they should pass through the queen excluders provided the openings in the queen excluders are approximately 163/1000 of an inch in diameter. We don't know whether you have comb honey or extracting supers, but probably the latter. When no excluders are used in the production of extracted honey, the queen may go upstairs and lay eggs in the combs of the extracting supers. In the production of comb honey it is unnecessary to use a queen excluder because the condition upstairs is so different from that below that the queen seldom or never occupies the sections. We believe that there is no difference in the size of any honeybees put out by any of the queen breeders of the country. Regular standard queen excluders, when molten metal is poured between the wires, will not exclude worker bees but will exclude queens.

**Soy Bean for Pollen and Nectar**

Question.—Do honey bees get enough nectar and pollen from soy bean to bring about cross pollination?—Bert Davis, Indiana.

Answer.—It is our understanding that the soy bean is self-pollinated and that it produces such an abundance of pollen that the stigma receives pollen almost immediately when the blossom opens. If it were not for this fact there would be much cross-pollination since the bees gather pollen from this plant freely, even though, according to soy bean experts, it yields little nectar as a rule. As a matter of fact, cross-pollination under natural conditions is reported to occur in as little as one or two per cent of the seed, and this low figure has even been obtained in seed plots of many varieties planted closely together in strips. It must be remembered that other insects, such as the thrips, play a part in the natural cross-pollination of this plant. For more detailed information relative to the pollination of this plant we would suggest that you write to Dr. W. J. Morse, Bureau of Plant Industry, United States Department of Agriculture, Washington, D. C. The information given in the preceding paragraph is to be found in the following publications: Piper, Charles V. and Morse, William J. 1923. The soybean. 1st ed. New York, McGraw-Hill Book Company, Inc. 329 P. Woodworth, C. M. 1932. Genetics and breeding in the improvement of the soy bean. Bul. 384, Univ. Illinois Agri. Exp. Sta., P. 297-404. It may interest you to know that North Carolina is apparently the only place from which a considerable crop of honey has been reported from the soy bean, although unverified reports have drifted in of its being a honey plant in other localities. (Answered by Jas. I. Hambleton, Washington, D. C.)

**Sour Honey—What to Do With It?**

Question.—I have a super of extracted honey that smells like vinegar. Shall I extract the honey and reclaim the wax, or use the combs for the new crop?—Chester A. Martin, New York.

Answer.—If a super of honey gives off an odor of fermentation or sourness indicating vinegar, the only thing you can do is to extract the honey, place the combs if otherwise good, back on a hive and let the bees clean them up. They can then be used for the storage of fresh honey. If the honey is only slightly fermented, fermentation can be stopped by the use of heat. Bring the honey up to temperature of about 160°. If the fermentation has gone too far the only thing you can do is to convert the honey into vinegar. Directions for making are as follows: Honey vinegar can be made just as cider vinegar is made by diluting the honey with water, then allowing the solution to ferment. Five parts of water to one part of honey by weight is about the right strength to make good vinegar. As the specific gravity of honey varies, it is perhaps well to check up the mixture of honey and water. When the liquid will just support a fresh egg, leaving a spot about as large as a dime above the surface, it is about right. Since such a dilute solution does not contain sufficient mineral matter for the growth of the organism causing fermentation, it is well to add certain minerals. The Michigan State College has published a bulletin on honey vinegar in which the following formula is recommended: Extracted honey, 40 to 45 pounds; water, 30 gallons; potassium tartrate, 2 ounces; ammonium phosphate, 2 ounces. The bulletin recommends that this solution be boiled for ten minutes in order to kill all or most of the micro-organisms which would later cause trouble, and to give the vinegar a better color. The process of alcoholic fermentation can be greatly hastened by adding a starter prepared from a pure yeast culture. The acetic fermentation can be hastened by adding "mother of vinegar." The bulletin mentioned above tells how to make these starters.

# Talks to Beginners

M. J. DEYELL

It is difficult for beginners and even experienced beekeepers to realize that securing surplus honey is dependent largely on favorable weather conditions. There must be sufficient moisture in the soil to cause honey plants to develop and the atmospheric conditions must be right, when honey plants are in bloom, for nectar secretion and bee flight.

In some regions conditions have been favorable this season and in other regions conditions have not been so favorable for bees. Many colonies were weak in the spring and did not build up in time to store surplus from the first part of the main flow from clovers.

### Building Up Colonies

Those beginners who got packages installed early and gave the colonies proper management in the way of supplying feed and comb space, have doubtless been successful in getting colonies built up in time for the main flow in the North.

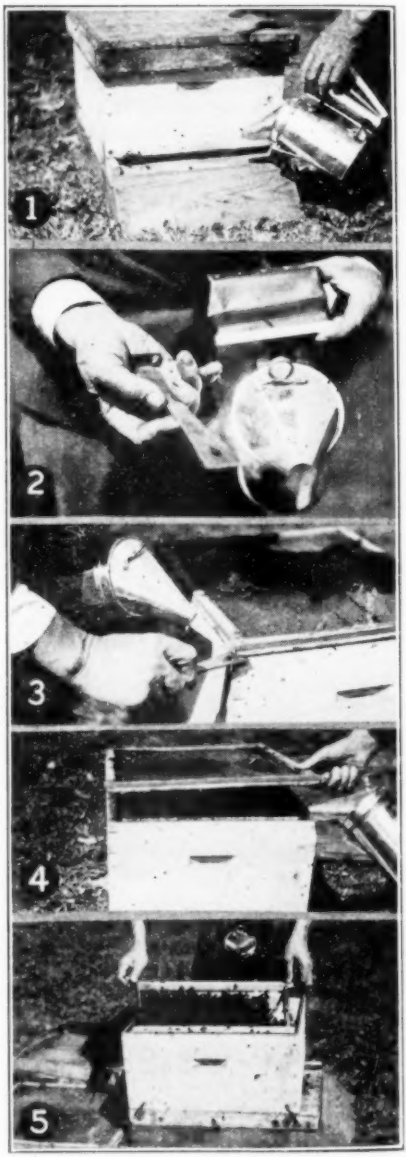
### A Word About Opening Hives

Earlier in the season I mentioned the importance of manipulating colonies properly. As the season advances this is all the more important. It pays to handle populous colonies just right in order to keep from getting stung, also to avoid having neighbors stung. The accompanying series of pictures illustrates the proper procedure in opening up a hive. Colonies should be examined only during fine days when bees are flying freely.

### Supering in Ample Time

In some regions of the North most of the surplus honey is stored during this month. It is extremely important to put on supers in ample time, so as to avoid congestion within the hives, which is considered by most authorities to be the prime cause of swarming. It is safe to say that many tons of honey are lost yearly because beekeepers fail to put on supers in time.

It is surprising how much honey a populous colony will store during one week, or even one day, when soil and atmospheric conditions are just right. I have a brother, a commercial beekeeper in Ontario, Canada, who keeps a scale hive throughout each season. One season his scale hive




1. Blowing a little smoke in the entrance. 2. Grasping the hive tool properly. 3. Inserting hive tool at corner of inner cover. 4. Blowing a few puffs of smoke under the cover to quiet the bees. 5. Lifting out a comb.

stored over 400 pounds surplus and during one day in late June of that year, this colony stored 26 pounds of honey.

### Removing Surplus Honey

All beginners are anxious to take off the first honey of the season. In fact, honey is sometimes removed from colonies before it is properly cured or ripened. Extracting combs should not be removed for extracting until they are at least three-quarters capped over. Comb honey should not be removed until each comb is completely capped.

A beginner with only one or two hives run for extracted honey can take finished combs out of supers and brush the bees off with a bee brush. Sections of comb honey may be removed in the same manner. However, a contrivance known as a bee escape, listed in any bee supply catalog, is very convenient and practically indispensable. This bee escape fits into the hole in the inner hive cover which is placed underneath the super of honey to be removed. The bees in the supers pass down through the bee escape into the brood chamber and are unable to return to the super, which is taken off after one day, as soon as it is free of bees.

### Extracting Equipment for Beginners

Honey should be extracted from combs as soon as they are taken off the hives, before the honey gets cold. A two or three frame extractor is large enough for a beginner with from one to a dozen hives. The machine throws the honey out of the combs by centrifugal force after the cappings are shaved off the combs with a hot knife, which is heated in a container of hot water over a gas plate.

The picture shows the complete equipment which includes a honey tank with cheese cloth over the top to strain the bits of cappings out of the honey as it is emptied into the tank from the extractor. The extracting room should have windows screened to keep out robber bees.

In operating the honey extractor it is quite necessary to fasten the machine down securely so that it does not rock while in motion. It is necessary also to select combs that contain about the same amount of honey so that the extractor may not to be thrown out of balance.

When the combs are placed in the baskets of the extractor a part of the honey should be thrown out of one side of the combs which requires only a few revolutions, and then all of the honey should be thrown out of the opposite sides of the combs. The combs should then be reversed and the remaining honey should be whirled out of the first side. If all the honey were thrown out of the first side during the first operation, the weight of the honey in the opposite side of the comb might break the midrib of the combs.

**A complete extracting outfit: an extractor anchored on a box, a wash boiler to receive cappings, a ten-pound pail to heat water on lamp stove, uncapping knives, honey tank with strainer cloths.**

### Watch for Robbing

If the honey flow should close abruptly bees are usually inclined to rob. Beginners should avoid opening hives unless it is necessary. Honey when taken off the hives and placed in the apiary house should be kept under cover. The apiary house door should be closed tightly. If no robbing is allowed to get started the bees are more easily handled and there is not likely to be any trouble as a result of people nearby getting stung.

(Continued on page 436.)

# BUY AND SELL HERE

## CLASSIFIED ADS

**Only responsible advertisers and honest advertisements will be admitted to these columns. References required from new advertisers not known to us. Rate—7 cents per counted word each insertion. Each initial, each word in names and addresses, the shortest word such as "a" and the longest word possible for the advertiser to use, as well as any number (regardless of how many figures in it), count as one word. Copy should be in the 15th of month preceding.**

### HONEY FOR SALE

The reliability of honey sellers is not guaranteed, although strict references are required.

FANCY clover and fall honey. Kalona Honey Co., Kalona, Iowa.

NEW white clover comb honey. Charles Guhl, Route 2, Napoleon, Ohio.

NEW crop clover comb and extracted honey. C. B. Howard, Geneva, N. Y.

FOR SALE—Extracted and comb honey. M. W. Cousineau, Moorhead, Minn.

HONEY—Light and light amber extracted. F. W. Lesser, Fayetteville, N. Y.

CHOICE MICHIGAN clover honey in new 60's. David Running, Filion, Mich.

WHITE clover comb and extracted honey. Porterholm Apiaries, Adrian, Mich.

FOR SALE—Fine grade light amber bulk comb honey. Hyde Bros., New Canton, Ill.

HOWDY'S comb honey will be ready this month. Howard Potter, Ithaca, Michigan.

ORANGE, palmetto or amber honey in new sixties. Peter W. Sowinski, Fort Pierce, Fla.

FOR SALE—No. 1 white honey and light amber. The Hubbard Apiaries, Onsted, Mich.

WRITE me for prices and samples of honey. I can please you. Thos. D. Sherfick, Shoals, Ind.

NEW crop clover honey, both comb and extracted, ready to ship July 15. F. J. Smith, Castalia, Ohio.

NEW clover honey, chunk and extracted, after July 10. Price on request. Jos. H. Hoehn & Sons, Ottoville, Ohio.

OUR 1936 crop of Michigan clover honey is now ready for the market. Write us your requirements. E. D. Townsend & Sons, Northstar, Michigan.

MY new crop clover comb and extracted honey will be ready for market about July 10. Prices upon request. Carlton D. Howard, Ovid, New York.

HONEY PACKERS—Write us for prices and samples on California and western honeys. We stock all varieties. Hamilton & Company, 108 West Sixth St., Los Angeles, California.

NEW YORK State comb and extracted honey, buckwheat and clover, any quantity, all size packages. Five-pound pails my specialty. Edward T. Cary, Midland Ave. and Tallman St., Syracuse, N. Y.

FOR SALE—Well ripened white sweet clover honey. Don't let your customers be without honey. The stock we furnish will please them. Write today for prices. Colorado Honey Producers' Association, Denver, Colo.

**STOLLER'S** excellent quality clover honey. Absolutely none finer. New 60's ready for shipment. Write Stoller Apiaries, Latty, Ohio.

EXTRACTED honey, any kind, any quantity. H. Blitz, P. O. Box 3438, Philadelphia, Pa.

NEW clover comb, well filled, 24 lbs., $3.00. Clarence Engle, Kearneysville, W. Va.

CHOICE white clover honey in 60-lb. cans. J. F. Moore, Tiffin, Ohio.

TUPELO HONEY—Will not granulate. Barrels and 60-lb. cans, 7 and 8 cents per lb. Anthony Bros. Honey Co., Apalachicola, Fla.

### HONEY AND WAX WANTED

BEEKEEPERS TAKE NOTE—We will not guarantee any honey buyers' financial responsibility and advise all beekeepers to sell for cash only, or on C. O. D. terms except when the buyer has thoroughly established his credit with the sellers.

WANTED—Dark honey, also capping melter honey. Edw. Klein, Gurnee, Ill.

WANTED—White, amber, and overheated honey. State price. C. Jankowski, Russell, Ill.

WANTED—Comb, chunk comb, extracted honey, all grades, any amount. Central Ohio Apiaries, Millersport, Ohio.

WANTED—Carlots of honey, state quantity, shipping point and price. Mail sample. Bryant & Cookinham, Inc., Los Angeles, Calif.

WANTED—Car lots or less; clover extracted honey and light amber, new cans. Clover Blossom Honey Co., 712 Kossuth St., Columbus, O.

HIGHEST CASH PRICE for your beeswax. Write for my high prices and shipping tags before disposing of your wax. The Walter T. Kelley Co., Paducah, Ky.

### FOR SALE

AUTOMATIC swarm trap. Circular free. Vikla Mfg. Co., Lonsdale, Minn.

YOUR wax worked into medium brood foundation for 15c pound. Fred Peterson, Alden, Iowa.

ELECTRICAL uncapping knives with transformer, 110-120 volts, 60 cycles, $14.00. Paul Krebs, 8000 Fulton Ave., Detroit, Mich.

PIERCE automatic queen grafting tools, $1. Aluminum electrical uncapping knives, $5 and $7. 340 Crosby St., Pasadena, Calif.

HOFFMAN FRAMES, mail order brand, accurately made, $35 per 1000, f. o. b. Medina; while stock lasts. The A. I. Root Co., Medina, O.

FOR SALE—Comb foundation at reduced prices. Plain wired and thin section. Wax worked at lowest rates. E. S. Robinson, Mayville, N. Y.

FOR SALE — Fine quality queen-mailing cages; Root quality bee supplies; both comb and extracted honey. Orders filled promptly. Write us or drive over M53, fifty miles north of Detroit. Hamilton Bee Supply Co., Almont, Mich.

QUALITY bee supplies. Prompt shipment. Reasonable prices. We take honey and beeswax in trade for bee supplies. The Hubbard Apiaries, Onsted, Mich.

BEST QUALITY soft white pine Hoffman frames, $30.00 per thousand. Complete line of bee supplies manufactured by us. All prices the lowest. Free catalog. The Walter Kelley Co., Paducah, Ky.

BEST quality bee supplies, attractive prices, prompt shipment. Illustrated catalog upon request. We take beeswax in trade for bee supplies. The Colorado Honey Producers' Assoc., Denver, Colo.

ROOT No. 25 B 4 frame multiple reversible hand extractor, in good condition. Used about 5 years. Price, $35.00, f. o. b. Valley Falls, Kansas. Claud Lane, 1201 Walnut St., Valley Falls, Kansas.

SPECIAL—While stocks last. We have a limited supply of slightly damaged copies of the previous edition of "Starting Right with Bees." Price, 30c postpaid. We also have some damaged copies of the new A B C and X Y Z of Bee Culture, which are priced at $2.00. The A. I. Root Co., Box G-7, Medina, Ohio.

## BEES AND QUEENS FOR SALE

ITALIAN queens. W. G. Lauver, Middletown, Pa.

GOLDEN Italian queens. Untested, 50c each. Sam Hinshaw, Randleman, N. C.

EXTRA fine quality brand Italian queens, 50c each. Geo. H. Merrill, Greenville, S. C.

CAUCASIAN bees will increase your honey production and winter better. Queens, 50c each. P. B. Skinner Bee Co., Greenville, Ala.

THREE-BANDED Italian bees and queens. Write for circular. Alamance Bee Company, Geo. Elmo Curtis, Mgr., Graham, N. C.

CRUMMEY'S better-bred three-band Italian queens. Tested, $1.00; untested, 50c each. A good 50-acre farm with good location for bees. John A. Crummey, Box 351, Jesup, Ga.

CAN furnish either Italian or Caucasian package bees and queens for July delivery very promptly. Shipped direct to you from one of my bee yards in the South. Address E. D. Townsend, Northstar, Michigan.

CAUCASIAN queens and package bees after June 1st; untested queens, 50c each; 2-lb. pkg. with queen, $1.95 each; 3-lb. pkg. with queen, $2.55 each. Safe arrival and satisfaction. Lewis & Tillery Bee Co., Greenville, Ala.

GOLDEN Italian queens that produce workers, very gentle to handle, good honey gatherers, health certificate, satisfaction guaranteed. Select tested, $1.50; tested, $1.00; untested, 50c. D. T. Gaster, Rt. 2, Randleman, N. C.

MAYEUX BEE FARM—Italian bees and queens, Honey-Girl strain; 3 lbs. bees with queen, $2.65; 4 lbs. bees with queen, $3.35; queens, 50c each. Safe arrival guaranteed. Mayeux Bee Farm, Alex L. Mayeux, Prop., Hamburg, La.

GOLDEN ITALIAN queens, the rest of the season, at 50c each. Remember you get the same quality and service. You get them whenever you order. They satisfy when you get them. No disease in our apiaries. E. A. Simmons Apiaries, Greenville, Ala., Powell Owen, Mgr.

WE have some fine queens now. Until August 1, we are going to guarantee acceptance of our queens in any normal queenless colony, provided customer orders them sent in our special introducing cage and follows instructions. Untested, 55c each. Five or more, 50c each. Silver Run Apiaries, Phenix City, Ala.

"SHE-SUITS-ME" queens. See page 186 of March number. Send for price list. Allen Latham, Norwichtown, Conn.

100 COLONIES BEES—Modern 10-frame extracting equipment. Beautiful Rio Grande Valley; irrigated orange, citrus section; perpetual honey flow. Guaranteed no disease here. Invigorating climate. Best offers takes everything. Alf. Hansen (City), Donna, Texas.

EXTRA yellow Italian queens that produce bees a little more yellow than the three-banded; more gentle and just as good workers. Untested, 50c each; tested, $1.00. Health certificate and satisfaction. Hazel V. Bonkemeyer, Randleman, Rt. 2, N. C.

CHOICE bright Italian queens that are a pleasure to work with and be proud to own. The stock has been bred and selected in the North the past 33 years for good winterers, hustlers, gentleness, and fine color; 75c each; dozen, $8.00; breeders, $6.00. Emil Gutekunst, Colden, N. Y.

LIGHT 3-BANDED ITALIAN QUEENS. We are one of the largest growers of queens in the United States, producing 100 queens or more daily. We feed tons of sugar annually, and spare no expense in any way, so that our queens are fully developed, fine, large beauties that will give you more than ordinary service and satisfaction. We can ship your queens quick from Paducah. We ship only young, laying queens and guarantee them to be purely mated, and satisfactory to you. You are the judge. Price, 50c each. To dealers, 42½c each. We need dealers in many localities. The Walter T. Kelley Co., Paducah, Ky.

## ELECTRIC PUMPS

WORLD'S SIMPLEST ELECTRIC PUMP—Only one moving part. Nothing to wear or cause trouble. 28-foot suction lift. Operates cheaply. Money-back guarantee. Thousands satisfied users. Write for free catalog. Dept. 257, Micro-Westco, Inc., Bettendorf, Iowa.

## HELP WANTED

WANTED—Experienced beeman. State experience, age, references and wages expected. Board and room furnished. John Kneser, Hales Corners, Wis.

## SITUATION WANTED

EXPERIENCED beekeeper desires work. R. Dearing, Kenmore, N. Y.

## WANTED—MISCELLANEOUS

FOUNDATION mills for thin section; also medium brood. W. Abbott, Exeter, Ont.

## BEE JOURNAL

THE BEE WORLD—The leading bee journal in Great Britain, and the only international bee review in existence. Specializes in the world's news in both science and practice of apiculture. Specimen copy, post free, 12 cents stamps. Membership of the Club, including subscription to the paper, 10/6. The Apis Club, L. Illingworth, The Way's End, Foxton, Royston, Herts, England.

**SEND US YOUR ORDERS FOR LABELS.**
**50 DESIGNS TO SELECT FROM.**
**THE A. I. ROOT COMPANY, MEDINA, OHIO**

## JUST NEWS

(Continued from page 428.)

of two and three pound package-bee colonies and over-wintered colonies with the operators outlining their methods of management. Plans are progressing rapidly for the educational program on August 14. The banquet scheduled in the evening will be one of the long-remembered features of the program. A tour on the morning of August 15 will be conducted to a number of honey houses in the Delphos vicinity. This will afford an opportunity to see commercial extracting plants in operation. The Ohio State Beekeepers' Association and the Tri-County Beekeepers' Association are anticipating that this will be one of Ohio's outstanding summer meetings.

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Beekeepers will find a special program devoted to a consideration of their problems at Massachusetts Farm and Home Week, scheduled for Massachusetts State College, July 28 to July 31. The beekeeping program will be held on Thursday, July 30. The importance of bees in pollination, a consideration of swarming and its control, and discussion of various types of hives are high lights of the scheduled program. Geo. Rea, extension specialist in apiculture at Cornell University, will speak on the topic "Bees for Orchard Pollination." F. R. Shaw, M. S. C. bee specialist, will talk on "Insects Pollinating Cultivated Blueberries." Other talks on the program include "Swarming and Its Control," by John Van de Poele, deputy inspector of apiaries, Massachusetts Department of Agriculture, and a second talk by Mr. Rea on "The Use of the Two-story Hives." Other meetings have been scheduled during Farm and Home Week for homemakers, florists, dairymen, commercial vegetable growers, poultrymen, nursery owners, and milk inspectors. Special programs in lawn management, the home flower garden, food preservation, forestry and fruit growing, are also on the program.

•

"Dear Ernest: In my office at this moment is Charlie Reese, and he and I are a self-appointed committee of two. We're going to get up an aeroplane party for the San Antonio, Texas, convention, to leave Cleveland, Columbus, Cincinnati, Louisville, and Memphis, Tenn., on November 15, or another convenient date. If this information reaches you in time, give it an editorial that will attract attention for those who anticipate taking an aeroplane trip at reduced rates. Write Charlie Reese, Columbus, Ohio, or Fred W. Muth, Cincinnati. We'll give full particulars in time for the August number. Yours very truly, Fred W. Muth."

## TALKS TO BEGINNERS

(Continued from page 433.)

### Keeping White Honey Separate from Dark Honey

In regions where buckwheat is grown it is necessary for beginners to get the clover honey off the hives before the buckwheat comes into bloom because the dark buckwheat honey would darken the white honey if mixed with it. In some regions of New York State, Pennsylvania and Ontario, this is a problem with beekeepers. In most of the middle and northwestern states, where buckwheat is not grown, clover honey does not have to be removed so early in the season.


# Free!! --- 300 Queens --- Free!!

To the first 300 beekeepers sending $1.00 each for one year's membership in the American Honey Institute, we will mail free and postpaid one of our bright Italian queens. This offer made for only a limited period. Rush your dollar to American Honey Institute, Madison, Wisconsin—**AT ONCE!** Orders filled in the order received. Rush.

Or, send us your orders at the regular price of 50c each. 15% discount to dealers. All queens genuine young selected bright Italians.

**Garon Bee Co., Donaldsonville, La.**

*J. F.*

# *McVay*

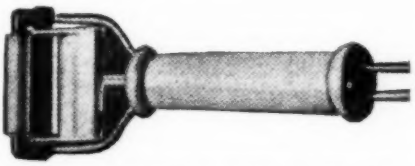
*Jackson, Ala.*

Offers

**FINEST ITALIAN QUEENS**

**AT 50c EACH**





**ROSEDALE STEAM UNCAPPING PLANE**

Superior of all steam knives; can be attached to same boiler. Guaranteed to work. Price $6.50, delivery charges extra. Diamond Match, Los Angeles, Calif., dealers for western states.

**ROSEDALE HUTTERAIN MUTUAL CORP., ELIE, MAN., CANADA.**



**CLASSIFIED ADVERTISEMENTS**
(Received too late for classification.)

WANTED—Car lots or less extracted honey. Mail sample. J. Hassan, 1700 N. Franklin St., Philadelphia, Pa.

FOR SALE—Root two-frame reversible extractor and uncapping knife. Good as new. Half price. E. L. Wroten, Benton Harbor, Mich.

HELP WANTED—Man to care for small apiary on small modern farm. Give qualifications fully. Beekeeper, 16814 Log Cabin, Detroit, Mich.

SUMMER TIME is requeening time. Good queens make wintering more sure and head strong swarms for the next season's honey crop. We offer the same good quality, prompt service and low price, 50c each. Can supply three-band Italians or gray Caucasians, reared in separate yards. Safe delivery guaranteed. Crenshaw County Apiaries, Rutledge, Ala.

**PATENTS—Williamson & Walton**
Attorney for The A. I. Root Co.
Munsey Bldg. Washington, D. C.

**MOUNTAIN GRAY CAUCASIAN QUEENS, GUARANTEED PURELY MATED, 50c EACH. WRITE FOR FREE CIRCULAR.**

**CAUCASIAN APIARIES, BROOKLYN, ALABAMA.**

**HONEY LABELS, MANY DESIGNS.**
**THE A. I. ROOT CO., MEDINA, OHIO.**



## YORK'S PACKAGE BEES AND QUEENS

QUALITY BRED ITALIANS

BETTER THAN EVER—LARGER SUPPLY—BETTER SERVICE—YOUNG BEES—FULL WEIGHT—SAME PRICE

Marketing Agreement Prices Are Your Protection for a Higher Standard of Quality.

| | |
|---|---|
| Untested Queens | 50c each, any number |
| Tested Queens | $1.00 each, any number |
| 2-lb. pkgs. bees with queens | $1.95 each, any number |
| 3-lb. pkgs. bees with queens | $2.55 each, any number |
| 2-lb. pkgs. bees without queens | $1.45 each, any number |
| 3-lb. pkgs. bees without queens | $2.05 each, any number |
| For additional lbs. of bees, add | 60c each, any number |

15% Discount to Recognized Dealers Only.

**YORK BEE COMPANY, JESUP, GEORGIA**
(The Home of Quality Products)



# *Northern Bred Queens*

Remember that our breeding stock of Italian Queens was imported recently from Northern Italy. You are buying the finest stock our 63 years in the bee business knows how to produce. Guaranteed satisfaction.

**Italian Queens, 1 to 4, 75c each; 5 to 24, 70c each; 25 or over, 65c each.**

***The A. I. Root Company, Medina, Ohio***

# DEALERS ATTENTION

We have a special proposition of interest to all dealers or to all beekeepers who wish to become dealers of Beekeepers' Supplies. Write for information. All goods are GUARANTEED SATISFACTORY.

Falcon Quality Products

W. T. Falconer Mfg. Company
Falconer, New York

## INSIDE INFORMATION

Fred W.—"Cliff, let's write an advertisement that 'We are in the market for amber and white extracted honey.' Tell them about our prompt remittance the day shipment is received."

Cliff—"O. K., Dad—you said it."

THE FRED W. MUTH CO.
Pearl and Walnut Streets
CINCINNATI, OHIO

## A Good Rule to Go By

Buy your bees and queens from

ALABAMA APIARIES
MT. PLEASANT, ALA.
Queens, 50c.
Packages, $1.95 and $2.55.

## LOOK!

Three-banded Italian bees and queens of fine quality. They are real honey-gatherers and gentle to work with. Safe arrival and satisfaction guaranteed. Write for circular.

ALAMANCE BEE COMPANY
Geo. Elmo Curtis, Mgr. GRAHAM, N. C.

HIGH CLASS PRINTING AT MODERATE PRICES. LABELS, STATIONERY, BOOKLETS, PAMPHLETS, ETC., ETC. THE A. I. ROOT CO., MEDINA, OHIO.


## ICE-BOX COOKERY

(Continued from page 406.)

over night or for several days. Slice very thinly, about one-eighth inch thick and bake in a 400° F. oven.

### Honey Ice-box Cake

The following honey ice-box cake is a bit different than the ordinary types of ice-box cake in that it is of a consistency which permits it to be kept a longer period of time with no lessening of its palatability. In fact, age improves its flavor and deliciousness. You will need: One-half pound of graham crackers, four tablespoons honey, one cup dates, one-half cup nutmeats, coarsely chopped, two tablespoons lemon juice, one-fourth teaspoon salt, and one cup heavy cream, whipped.

Crush the graham crackers very fine. Run dates through the food grinder, add lemon juice and drizzle the honey over them. Let stand for about one-half hour, add salt; fold dates, nuts and crushed crumbs into the whipped cream, reserving two tablespoons of the crumbs. Sprinkle a portion of these crumbs on waxed paper. Turn the mixture on waxed paper, shape in a roll, coating with remaining crumbs. Roll up in the paper and chill thoroughly. Serve in slices, topped with honey-sweetened whipped cream.

### Summer Honey Drinks

If you have a sweet tooth frosty, honey-flavored beverages are worth looking into. Lemonade and orangeade sweetened with honey are particularly good. Dried apricots stewed in plenty of water, sieved, sweetened with honey to taste, thoroughly chilled and served over finely cracked ice is a treat. Juice from canned fruits is a boon at this time of the year.

In preparing these cool beverages waiting for the honey to dissolve is a slow process. This delay may be avoided by first adding the honey to a small amount of warm water before adding it to the beverage which is to be chilled. Or, with a jar of diluted honey always on hand in the refrigerator, these refreshing beverages may be made up easily and quickly upon demand. Simply combine equal parts of honey and warm water, blending them thoroughly.

Those who are partial to mint flavor will find honey mint syrup adds variety to the usual fruit beverages. To make it: Combine one-fourth cup honey, two tablespoons lemon juice and one teaspoon of

(Continued on page 439.)

## ICE-BOX COOKERY

(Continued from page 438.)

mint extract or crushed mint leaves to flavor. Store in refrigerator.

Pink lemonade is a real thirst quencher: Six cups rhubarb juice, one-half cup honey, one cup sugar, one-half cup pineapple juice, one-half cup lemon juice and one and one-half cups orange juice. Add honey and sugar to a part of the rhubarb juice which has been warmed, stirring until both are dissolved. Add fruit juices and store in refrigerator. This makes a fairly large amount of syrup which keeps perfectly in a refrigerator. When ready to serve, dilute with ice water. If your rhubarb is not of the rosy variety, a few drops of red vegetable coloring will add much to the attractiveness of this beverage.

Spicy golden punch calls for: One cup diluted honey, two and one-half cups water, two tablespoons of ginger root, one cup crushed pineapple, four cups pineapple juice, one-half cup lemon juice and one cup fresh white cherries, cut in small pieces.

Combine ginger root and water and simmer for thirty minutes. Strain and add remaining ingredients. Chill thoroughly before serving.

Another tempting, healthful beverage that will make you pass your glass for more is Honey Fruit Tingle. For this you will need: Two cups crushed strawberries, two cups orange juice, one-half cup lemon juice, three-fourths cup honey, one and one-half cups of hot water and one quart of ginger ale.

Dissolve the honey in the hot water and cool. Add to combined fruit and juices. Chill thoroughly. Add ginger ale just before serving. Pour over cracked ice.

And now for a tasty Butterscotch Sauce to top the honey ice cream you will be serving often. Melt four tablespoons of butter, add four tablespoons of cornstarch and stir until smooth. Add one cup honey and one cup brown sugar. Cook until mixture forms a soft ball when tested in cold water.

Aurora, Nebraska.

ITALIAN QUEENS

Shasta Apiaries

SHASTA, SHASTA CO., CALIF.

Express Office, Redding, Calif.

GEO. W. MOORE F. W. CHAPMAN

THRIFTY

THREE-BANDED ITALIAN QUEENS

50c Each

15% Discount to Dealers

Young, vigorous queens will help you prepare your colonies for winter and bring them out in the spring ready for the early flow of nectar. Replace your old or inferior queens now and reduce winter loss and spring dwindling.

Forty-three years' experience assures you of the best stock.

W. J. FOREHAND & SONS

Fort Deposit, Alabama.

Breeders since 1892.

Moore's Strain

Leather Colored Italian Queens

NORTHERN BRED

1 to 9 .....70c each
10 to 24 .....65c each
25 to 49 .....55c each
50 or more .....50c each

World-wide reputation for honey-gathering, hardiness, gentleness, etc., since 1879. Safe arrival and satisfaction guaranteed. Circular free.

J. P. Moore

MORGAN KENTUCKY

QUEENS

We are now shipping HOLLOPETER'S strain of choice three-banded Italian queens. This strain is hardy, hustling, honey gathering Italians, not inclined to swarm and easy to handle.

Untested queens, each, 60c; two or more, 50c each. Tested queens, each, $1.

WHITE PINE BEE FARMS

Rockton, Pa.

(With Gleanings from 1911.)

World War Vet. NORTHERN ITALIAN QUEENS Member V. F. W. Post No. 587.

Queens that satisfy. Price, 1 to 9, 60c each. 10 or more, 50c each. Money back if not satisfied in 30 days.

WEST BRANCH APIARIES, Grover Hill, Ohio.

# ATTENTION, PLEASE!

It is time to requeen and you should do it with **STEVENSON'S GOLDENS**, for we are **QUEENS of QUALITY.** We produce abundantly, those large, gentle, **HONEY PRODUCING BEES.** You'll appreciate them, we're sure. Write for descriptive circular. Marketing Agreement quotations.

**STEVENSON'S APIARIES, Westwego, La.**

# Window Cartons

**FOR COMB HONEY**

•

**The Ideal Package for Roadside Selling.**

•

100, $1.20; 500, $5.50.

Postage extra. Mailing weight, 6 lbs. per 100. Printing name extra. Write for prices on containers.

**THE A. I. ROOT COMPANY**
**MEDINA, OHIO**

# "THE 'QUEEN' OF THE CROP"

We don't have to tell you how important a queen is. But we WOULD like you to know that we have quality queens and can deliver them promptly.

**THE PUETT COMPANY**
**HAHIRA, GEORGIA**
"Where Satisfaction is a Certainty."

## QUEENS, 50c EACH

For balance of season. And they are those Palmetto Quality Queens—the three-band Italians that don't disappoint you. Orders from wholesale dealers solicited. 15% discount to dealers. No disease.

**C. G. ELLISON, BELTON, S. C.**

# Queens

**Old Reliable 3-banded Italians**

***They Satisfy***

**23 Years a Breeder**

**There is a big difference in QUEENS.**
**BALANCE OF SEASON.....50c EACH**

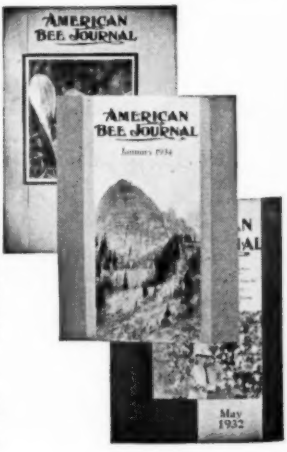
**JOHN G. MILLER**
**723 C STREET, CORPUS CHRISTI, TEXAS**

# 12-Month Subscription with Bee Primer - - $1.00

American Bee Journal—monthly; published and edited by beekeepers for beekeepers. Full of pictures and tips on care of bees and selling of honey. **SAMPLE COPY FREE.**

Full 12-month subscription, with **BEE PRIMER**—22-pages, illustrated booklet to help the beginner—**BOTH FOR $1.00.** Combined with Gleanings in Bee Culture—both magazines and Primer, **ONE YEAR, $1.60.** This offer good only in the United States. Address—

**American Bee Journal, Hamilton, Illinois**



## EDITORIAL

(Continued from page 418.)

he can do to take care of his orders for next season.

Entrance diagnosis during a honey flow is as quick as it is easy. It enables one, by one quick glance and without opening a single hive, to know pretty accurately which hive will need supers, either now or on the next round.

Many of the old veterans still put on supers indiscriminately, giving some colonies too much room and others not enough. The up-to-date man who watches the flight at the entrances may determine that here is a colony that needs two supers, another one only one, and still another that doesn't need any. To give the latter a super only means delaying the colony's rearing of brood. The hive temperature must be maintained at the proper point so that egg laying and brood rearing may continue without let-up or hindrance. When a super is added to such a colony the temperature in the hive will necessarily drop some and brood rearing will be delayed.

The beginner, however, should not be misled by play flights of young and old bees on the first bright, warm morning, after a period of dark and chilly weather. This is a frolic of mostly young bees rejoicing in the sunshine. In real play flight the bees buzz up and down and around in front of the entrance, few going in or out. These noisy, buzzy bees will continue their demonstration for five or ten minutes, after which all is quiet. On the other hand, bees going in and out for nectar will continue their activites all day. If a black storm cloud threatens, they rush to get in before the rain will greatly increase. It is then a pretty sight to see the busy workers scurrying in. Conversely, the outrush practically ceases for the time being. If some incomers get caught in the rain, they will drop to the ground but as soon as the sun comes out again and they dry off, they will take wing for home, none the worse for the dousing.


## Imported Italian Queens

Our breeding stock recently imported from Italy. Better get those colonies in shape for the fall flow by requeening now.

| | |
|---|---|
| Untested queens ... ..... | $0.50 each |
| Tested queens ..... | 1.00 each |
| Breeding queens ..... | 5.00 each |

THE CROWVILLE APIARIES
RT. 1. WINNSBORO, LA.

## Mott's Northern-Bred Italians

**Eliminate that swarm nuisance. Free list. Guaranteed purely mated.**

June, July, $1.00; 2 or more, 75c each; 50, $35.00; $100, $65.00. Fair to good breeders, $2.00, $3.00, $5.00. Virgins, 40c. Satisfaction guaranteed.

E. E. MOTT, GLENWOOD, MICH.

## THREE-BANDED QUEENS

Your success depends on the queen. Let me furnish you queens this season. They must satisfy. 50c each. 15 per cent discount to dealers. Health certificate furnished.

A. M. KELLY
Bell, Florida.

## QUEENS

BRIGHT THREE-BANDED ITALIANS

A pleasure to order NORMAN BROS.' queens and bees, state many customers. (THANKS.) If you need queens or packages, we can ship the day you want them. Satisfaction guaranteed.

| | |
|---|---|
| UNTESTED QUEENS .... | $0.50 |
| 2-lb. Pkg. with queen..... | 1.95 |
| 3-lb. Pkg. with queen..... | 2.55 |

**Norman Bros. Apiaries, Ramer, Ala.**

## QUEENS

Good Yellow Italians. The kind that produce bees that are gentle, hardy, and great honey gatherers.

| | |
|---|---|
| Untested ..... | $0.50 |
| Tested ..... | $1.00 |

W. O. GIBBS COMPANY
BROOKFIELD, GA.

## Get Running's Queens

**And Get Honey—They Satisfy**

The kind WE use in our extensive Michigan Apiaries, where WE produce honey by the carload.

Accredited and certified ITALIAN stock, bred for gentleness and honey-getting.

**Price, any number, 50c each.**

**QUICK SERVICE**

**DAVID RUNNING**

**Sumterville, Alabama**

# FOR SALE

Pure Italian queens. Nothing but the best. Bright yellow and three-band. 50c each, subject to dealers' discount. You send for them, they go.

**GRAYDON BROS.**

**Route 2. Greenville, Ala.**

**For safer wintering—REQUEEN.**
**For better profits—REQUEEN.**
**For stronger colonies—REQUEEN.**
**For bigger crops—REQUEEN.**

**Untested, 50c; Tested, $1.**

Certified and accredited by State Dept. of Agriculture.

**J. M. CUTTS & SONS**
**R. No. 1. MONTGOMERY, ALA.**


## WILD WHITE CLOVER IN PASTURES

(Continued from page 394.)

seed planted in this pasture. The rate of seeding is one pound of wild white clover in the seed mixture when the land is seeded, but none seems necessary if there are a few of the plants in the field to start with. The cost of the wild white clover seed, where used, is about $1 per acre. The superphosphate costs only about $2 per acre per year since the 800-pound application will last over a period of about four years.

The beekeeper who has no pastures of his own to improve can co-operate with farm organizations to encourage the improvement of pastures. This will help him and will also benefit the man who grows live stock. There seems always to be a close association of one agricultural pursuit with another.

Wolcott, New York.


**50 CENTS each for good three-band Italian Queens that must please the customer.**

**D. W. HOWELL, SHELLMAN, GA.**

**MOUNTAIN GRAY CAUCASIAN QUEENS FOR JULY**

**at 50c each, untested, any number; tested, $1.50 each; select tested, $2.00 each. 10 years ago a price like above was not thought possible for such quality queens, as they could not be bought, even at any price, in this country. For easy handling and good honey-gathering, try Caucasians.**

**BOLLING BEE CO.**

**BOLLING, ALABAMA**

# "BETTER-BRED QUEENS"

**3-Banded Italians**

## 50c each Dealers, 42½c

Now is the time to start laying the foundation for future success with your bees by requeening with our BETTER BRED stock. Orders shipped the same day received. Retail orders shipped by air-mail if requested. We recommend air-mail service. Today's queens reach you tomorrow. If you wish dealer's prices, order direct from this ad.

**Calvert Apiaries, Calvert, Alabama**

## Caucasians

Extra gentle, prolific, long tongue, little swarming, dependable workers—10% to 40% ahead of Italians. Wintered here out-ot-doors and bred in a climate like their native land—severe winters—cold windy springs—thus insuring their good qualities. Foundation stock from mountainous province of Terek, Caucasus.

## Carniolans

Prolific at all times, very gentle, best of winterers, build beautifully white combs, most excellent workers. My Carniolan queens headed colonies producing 435 lbs. extracted per colony over the whole yard. 30 years' experience with them. Have supplied many State Agricultural Colleges and Experiment Stations with them. My own and Jan Strgar imported strains.

**Prices—Untested queens, 1 to 6, 60c each; six or more, 50c each. Tested, $1.00 each. Breeding queens, $5.00 each.**

Both races winter better than average Italians. Both races build up more readily during the unfavorable springs of our eastern and northern states and are ready for the early flow. Both these races will improve your Italians in gentleness and honey gathering. July is a good time to do general requeening.

**ALBERT G. HANN**

**GLEN GARDNER, NEW JERSEY**

## Bright Italian Queens

**BALANCE OF SEASON**

**50c each, any number**

If you requeen with Taylor queens this fall you will be delighted when you open up next spring. Our special breeding method gives you winter protection, reduces swarming. Write for our circular and learn how we do it. Our location is free of disease.

**TAYLOR APIARIES**
**LUVERNE, ALA.**

## Norman's Italian Queens 50c each Via Return Mail

I am equipped to give you prompt service and superior 3-banded Italian queens, purely mated, that I guarantee to please. Try them and watch your colonies grow. 15% discount to dealers. Tested queens, $1.00 each. 2-lb. package with queen, $1.95 each.

**JOHN A. NORMAN, LAPINE, ALABAMA**

## Success or Failure

Depends on the QUEEN. Let us supply you with your queens this summer. We have been shipping thousands of queens yearly since 1920. We have customers who use our bees and queens every year and are always satisfied. You, too, will be pleased with our queens and service, so let your orders come. We will ship immediately.

**Selected untested queens....$0.50 each**
**Selected tested ..... 1.00 each**

**Can also supply some packages at $1.95 for two pounds, and $2.55 for threes.**

**N. B. SMITH & COMPANY**
**CALHOUN, ALABAMA**

## Knight's Dependable Queens

**TREAT YOURSELF to THE BEST**

**Line-bred, Three-banded Leather-Colored Italians, Accredited and Certified by Alabama State Department of Agriculture.**

They are extra large, producing large bees. All queens carefully reared and are the best that can be produced.

**All queens guaranteed mated pure.**

**PRICE POST PAID Select (one grade), 50c. No charge for clipping. No disease. Prompt shipment.**

**Jasper Knight, Hayneville, Alabama**

## ←Morrison's Northern→

Three-banded or Leather-Colored Italians. Our foundation stock comes direct

**→ From Northern Italy ←**

QUEENS

| | | | |
|---|---|---|---|
| 1 to 25 | 60c | 50 or over | 50c |
| 25 to 50 | 55c | Tested | $1.00 |

**The Cloverdale Apiaries, Cloverdale, Ohio**

IF YOU HAVE DOLLARS TO THROW AWAY
THEN DON'T BUY

# ROOT QUALITY SECTIONS

Because you save money when you buy the famous section made from specially selected basswood lumber with long fiber. **THIS LONG FIBER PERMITS BENDING AND FOLDING WITHOUT BREAKING.** Also, the V-groove is cut special. Examine and fold Root Sections. You will see the difference.

YOU DON'T THROW DOLLARS AWAY
when you buy

## Root Quality Sections

SEE YOUR ROOT DEALER

Root QUALITY BEE SUPPLIES

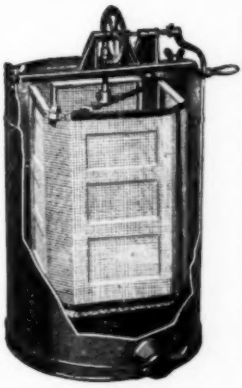
**The A. I. Root Company**
Medina, Ohio

Root QUALITY BEE SUPPLIES

# Extractors Every Beekeeper Should Know About

**DOUBLE DUTY**
**NOTE THE CAPACITY**

The new No. 12 takes three JUMBO or six SHALLOW frames at a loading. New No. 14 (as shown) takes four STANDARD HOFFMAN frames or eight half-depth frames. The No. 10 takes three standard frames or six half-depth frames. Comb faces rigidly supported—almost impossible to break a comb while extracting. Fast and efficient, and for easy operation, the crank is on the side where it should be.



**COMBINATION COMB & CAPPINGS EXTRACTOR**

You need no makeshift affair to dry cappings—the **DOUBLE DUTY** feature on all models does both jobs perfectly. Just loosen two wing nuts and entire top lifts off to easily pour in cappings. Whirling a few minutes dries them. Reel basket is just as quickly lifted out to dump dried cappings and for quick, easy cleaning. Ball bearing reels—heavily built throughout. You'll find this extra feature on STANDARD "DOUBLE DUTY" only.

**You Can't Beat Standard's Quality at These Prices**

| | | | |
|---|---|---|---|
| No. 10—3 Standard or 6 Half-Depth, | 9⅝x16 | 40 lbs. | $13.25 |
| No. 12—3 JUMBO or 6 Shallow..... | 12x16 | 48 lbs. | 14.75 |
| No. 14—4 Standard or 8 Half-Depth, | 9⅝x16 | 48 lbs. | 14.25 |

Write for complete Catalog of Extractors, Tanks, Escapes, Uncapping Knives, Smokers, etc. Ask your dealer—if he can not supply Standard Products, write us for prompt shipments.

**For 60 years making honest goods and giving fair, square and honest treatment.**

## THE STANDARD CHURN COMPANY, WAPAKONETA, OHIO

# Italian Queens

Guaranteed Delivery

Market Agreement Prices

• • •

**Requeen with Merrill's Quality Queens**

• • •

## Merrill Bee Company

BUCATUNNA, MISS.

Mississippi's Oldest Shipper

If it is **QUEENS** you need we can make shipment within 24 hours after receipt of your order.

Three-band Italians, 50c each, any number.

Discount to Dealers.

**Citronelle Bee Co., Inc.**
**Citronelle, Ala.**

# QUEENS

Italians — Caucasians
50 CENTS EACH
15% discount to dealers
Prompt, efficient service.

**WEAVER APIARIES**
**NAVASOTA, TEXAS**
Agents for Pinard Nailess Queen Cage.

# *Let's Have Some Fun!*

**HOW?**

By staging a **HONEY HARVEST FESTIVAL.**

**WHEN?**

Hallowe'en Week ought to be a good time—let's agree on October 25-31.

**WHAT WILL WE DO?**

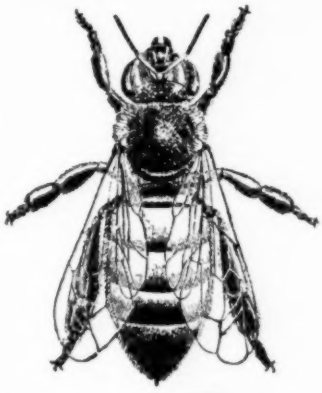
That's up to **YOU**—the program is full of ideas for a joyful celebration to identify the labors of the honey bees and incidentally, the beekeeper, too!

**FREE!**

A post card brings you the program free.

## *American Honey Institute*

**MADISON, WISCONSIN.**



# Italian Queens

The package season for 1936 is practically over, so next we turn our thoughts to supplying you with the best in queens. We have every facility for rearing good queens—well equipped queen yards, experienced breeders who are instructed to spare no expense to produce the best, and the best strain of Italian bees we have been able to produce through years of selection.

Order one, one hundred, or one thousand, it will have the same prompt attention.

——PRICES——

Untested Queens, 50c each.
15% discount to dealers.

■

Write for catalog of cypress bee supplies. You will be pleased with the quality and price.

## The Stover Apiaries

**Mayhew, Mississippi**

# JENSEN'S

## QUEENS for REQUEENING

**No more packages this season.**

Losses caused by poor queens are probably greater than from any other one thing. Honey lost because colonies do not build up. Colonies lost in winter because of going into winter with insufficient young bees. Old queens often die in winter causing bees to become unduly restless, resulting in the death of the colonies.

You can't afford to keep poor queens when good ones cost so little.

We continue to offer FREE, two Select Tested Queens to anyone sending us $1.00 for membership in the American Honey Institute.

**Select Untested Queens**
**50c each**
**Balance of the Season.**

## JENSEN'S APIARIES
**MACON, MISS.**

Home of "Magnolia State" Strain Pure Three-Banded Italians.

# "YES"

**QUEENS VIA RETURN MAIL. NO DELAYS. I SHIP WHEN YOU WANT THEM.**

•

**PRICE LIST**
**SELECT UNTESTED QUEENS, 50c EACH. SELECT TESTED, $1.00 EACH.**
**15% DISCOUNT TO DEALERS FOR RE-SALE.**

•

**ACCREDITED AND CERTIFIED BY ALABAMA STATE DEPT. OF AGRICULTURE.**

•

**ALL QUEENS GUARANTEED PURELY MATED**

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## W. E. HARRELL
Formerly Hayneville Apiary Co.
HAYNEVILLE ALABAMA


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